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## COMMUNICATIONS

### THE FATHER OF BRITISH OPTICS

### ROGER BACON, c. 1214-1294

BY

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LONDON

THAT great glory of English science, Roger Bacon, was born in or about the year 1214. This date is inferred from a passage in one of his works, written in 1267. "I have laboured much at sciences and languages, and it is now forty years since I first learnt the alphabet; and I was always studious; and except for two of those forty years I have always been *in studio*." Little[1] says that this probably means at a university; that "boys of ten or twelve years frequently began their education at Oxford, and it is likely that Bacon went there at an early age." In a footnote he disposes of the fiction, based on a foolish legend, that Bacon was educated at Brasenose or at Merton College. The latter of these "was not founded till Roger was advanced in years; Brasenose College was founded more than two centuries after his death. Historical fictions die hard."

No fewer than three places in England have been claimed for his birthplace. John Rous, *Hist. Regum Angl.*, quoted by Little, states that he was born in or near Ilchester in Dorsetshire. I suppose that this must be a slip of the pen, for there is no such place as Ilchester in Dorset; and the town of that name in Somerset is usually given the precedence.

In Collinson's History of Somersetshire, 1791, Vol. III, p. 314, is the following: "In the friary of Ivelchester was born A.D. 1214, that celebrated philosopher Roger Bacon, who was justly accounted the wonder of his age. His youthful education was had at Oxford,

from which university he returned to Ivelchester with great acquisitions of classical knowledge, and there took the habit of a Franciscan Friar. He then applied himself to the study of philosophy, in which he made so great a proficiency that he was invited over to Paris to assist in the transactions of that university. Here he was admired and envied, and known too much in an invidious and vulgar age to prosper. The ocular sciences to which he applied drew the attention of those who had not the understanding to weigh uncommon aspections in the true scale of reason and philosophy, and they accused him of dealing with the devil. His own fraternity also caballed against him, and he was sometime confined in prison as a magician and a sorcerer. When thence relieved he returned to Oxford, and there in the College of Franciscans spent the remainder of his days in study."

In John Argentein's *Loci Communes*, written c. 1476 (Ms. Ashmole, 1437, p. 155), quoted by Little, is this note: *Hic Rogerus fuit filius Fugardi, et creditur quod erat Rogerus Baconus natus apud Witnam juxta Oxoniam* : while Bisley in Gloucestershire also claims to have been the privileged spot. Sir Robert Atkyns[2] states under Bisley as follows: "The first cloathing-mill in these parts was erected in Todgmore Bottom, in this parish, in which place Fryer Bacon was born. He was educated at St. Mary Chapel now St. Bury Mill on Stroud river in the parish of Hampton, wherein is a room at this day called Fryer Bacon's study. He dyed 1284. He was a very learned person, and wrote 80 books, and for his skill in mathematics was reputed a conjurer in those ignorant times." In the introduction to Bridges's[3] edition of the *Opus Majus*, reprinted (1914) by H. Gordon Jones, F.I.C., F.C.S., an interesting table of facts relating to Bacon's life is given. Among contemporary events are noted in 1209 the condemnation of Aristotle's *Physics and Metaphysics* in Paris; in 1215 a confirmation of this by Papal Legate, and in 1231 the partial removal of this condemnation by Pope Gregory the Ninth. But he entirely omits what is to English people the most important contemporary event, the passing of *Magna Carta* in 1215, that *praesidium* or bulwark of our liberty wrested by the Barons from King John.

There is a story that Bacon preached at Oxford before the King, abusing the foreign favourites by whom Henry was surrounded. Two of the early chroniclers mention the fact, Roger of Wendover and Matthew Paris; the latter mentioning the preacher by name. The extract from Roger of Wendover is as follows: (English Historical Society, Vol. I, p. 268 of the chronicle.) *In hoc autem colloquio frater quidam de ordine Praedicatorum qui coram rege et quibusdem episcopis praesentibus verbum Dei praedicabit, libera voce regi patenter dixit, quod nunquam diuturna pace frueretur, nisi Petrum Wintoniensem Episcopum, et Petrum de Rivallis,*

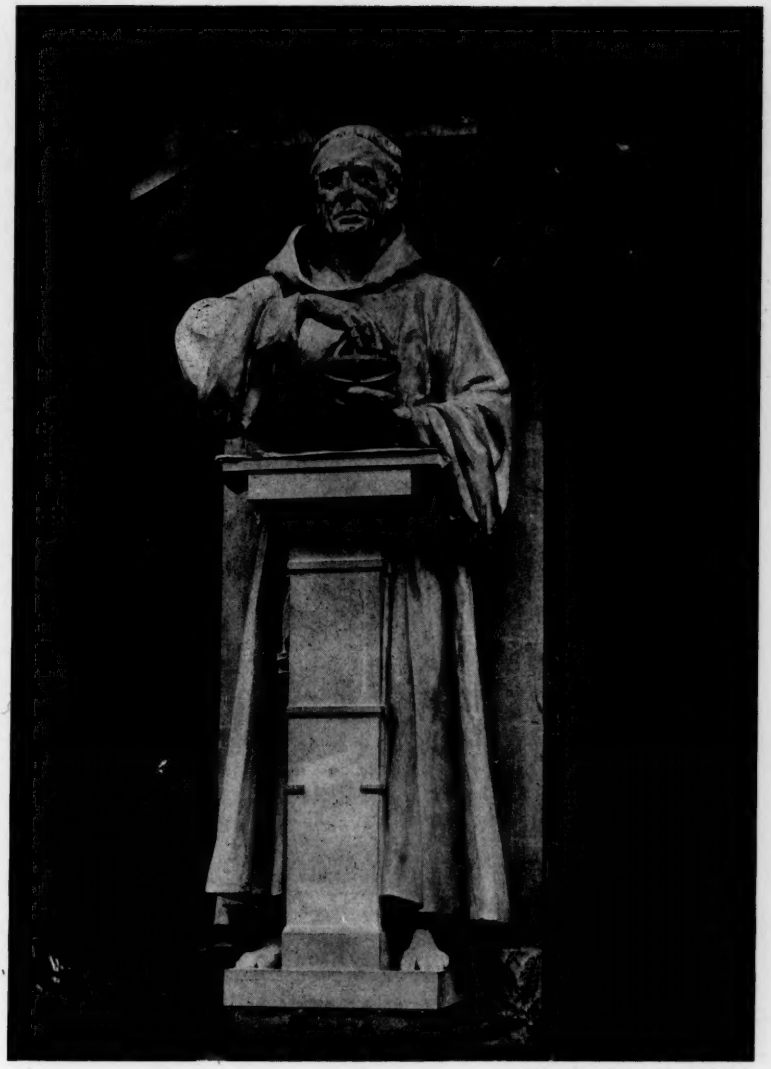

*Photo by Gillman & Co., Ltd., Oxford.*

ROGER BACON, c. 1214—1294.

"*Virtus, repulsae nescia sordidae,*
*intaminatis fulget honoribus,*"

HOR., Carm. III, 2.

UNIV. OF MICH.

*ejus filium, a suo consilio removeret.* This is dated 1233. A footnote gives the name of *quidam frater* as Robert Bacon. Little gives Matthew Paris's version as follows: "A clerk of the court of a pleasant wit, namely, Roger Bacon, ventured to make this joke: 'My Lord King, what is most harmful to men crossing a strait, or what makes them most afraid?' The King replied, 'Those men know who occupy their business in great waters!' 'I will tell you," said the clerk, '*Petrae et Rupes.*'" Rocks and Stones form a subtle play upon the name of the Bishop of Winchester, Peter des Roches. I have not a copy of the works of Matthew Paris, and cannot decide between the Roger of the extract and the Robert of the footnote; and in any case it is not at all certain that the Bacon in question is the famous scientist. Little states that the name was not uncommon, and instances examples of it on the Patent Roll of 3 Edward the First. He might have cited the pipe rolls also, where the name of Bacon occurs frequently in the reign of Richard the First, and can be found earlier still in the rolls for the reign of Henry the Second. But, on the other hand, Roger was certainly at Oxford in 1233, for he states that Edmund Riche, who became Archbishop of Canterbury in that year, "lectured at Oxford in my time." His greatest tutor while at Oxford was undoubtedly Robert Grosseteste, later Bishop of Lincoln, of whom he said *novit scientias*; and it is likely that he was acquainted with Adam Marsh. To quote Little "it was doubtless his connection with these men that led Roger to enter the Franciscan order." It is not known at what date this occurred, but it is to be inferred from a passage in one of his works that he had reached years of discretion when he took this step.

He began his studies on positive science before 1250, and by 1267 he had spent more than 2,000 *librae* on books and experiments. From this statement it has been inferred that he came of a wealthy family;* Little states that his family espoused the Royal cause in

*It may be of interest to note that Planché in *The Conqueror and His Companions*, 1874, in dealing with William de Colombiéres, mentioned by Wace (Rom. de Rou), as having been present at the Battle of Hastings, states "the family of Colombiéres (Columbers, Columbels) . . . appears to have struck root in England, and had become an important baronial family in the reign of Henry II, in the 12th year of whose reign Philip de Columbers accounted for ten knights' fees 'de veteri feoffemento' and one 'de novo,' and in the 22nd year of the same reign paid twenty marks for trespassing in the King's forests." Dugdale's account only begins with this Philip, and he has not noticed that in a Plea Roll of Henry II,* Roger Bacon is set down as brother to Philip de Columbers, nor that a Gilbert de Columbers was a contemporary of Philip and settled in Berkshire (Liber Niger). A reference to the Liber Niger, Vol. I, p. 97, shows that Philip de Columbaries held ten knights' fees in Somersetshire, but Ilchester is not named as among them.

In the Red Book of the Exchequer, Vol. I, p. 306, Gilbertus de Columbariis held two knights' fees in Berkshire; and on page 377 he is credited with the fourth part of a knight's fee in Lincolnshire under William de Roumara. It would be interesting to know if Roger Bacon could claim that his ancestors came over with William the Conqueror.

*One must assume that this is an error for Henry III. As Roger Bacon had not been born at the time when Henry II died, he could hardly be found mentioned in a record of the second Henry's reign.

the Barons' war and suffered great losses. But the amount is staggering, for the Paris *libra* appears to have been worth at the time 20 *solidi* (shillings); and even if the lesser sum of between £600 and £700, which has been estimated, be accepted, the value of such a sum at present-day rates would be enormous, and all spent "on secret books and various experiments and languages and instruments and tables."

Roger left Oxford for Paris about 1245. He states that he had seen Alexander of Hales with his own eyes, and he heard William of Auvergne dispute before the whole university. The latter died in 1248. Rous, quoted by Little, states that he was made D.D. of Paris and that he was incorporated D.D. at Oxford. He is said to have returned to Oxford soon after 1250, and he was lecturing at about this time; he says himself that he won some fame. About 1256 Roger was exiled from England and kept under supervision in Paris for ten years. In 1263 he wrote an astronomical treatise, *Computus Naturalium*. Soon after this his name was mentioned to the Cardinal Bishop of Sabina, who was interested in his discoveries. In 1265 the Cardinal became Pope Clement the Fourth and on June 22, 1266, Clement wrote requesting Roger to send him a fair copy of the work of which he had heard; the letter runs as follows:

EPISTOLA CLEMENTIS PAPAE AD ROGERIUM BACONEM.

Dilecto filio, Fratri Rogerio dicto Bacon, Ordinis Fratrum Minorum.

Tuae devotionis litteras gratenter recipimus: sed et verba notavimus diligenter quae ad explanationem carum dilectus filius G. dictus Bonecor, Miles, viva voce nobis proposuit, tam fideliter quam prudenter.

Sane ut melius nobis liqueat quid intendas, volumus, et tibi per Apostolica scripta praecipiendo mandamus, quaternus, non obstante praecepto Praelati cujuscumque contrario, vel tui Ordinis constitutione quacunque, opus illud, quod te dilecto filio Raymundo de Lauduno communicare rogavimus in minori officio constituti, scriptum de bona littera nobis mittere quam citius poteris non omittas; et per tuas nobis declares litteras quae tibi videnter adhibenda remedia circa illa, quae nuper occasione tanti discriminis intimasti: et hoc quanto secretius poteris facias indilate.

Datum Viterbii, X Cal. Julii, anno II.

The friar was to do this, in spite of any constitution of his order to the contrary, secretly and without delay. The Pope supposed that the work was already written, but this was not the case, for Bacon wrote to the Pope as follows: "When your Holiness wrote to me, on the last occasion, the writings you demanded were not yet composed, although you supposed they were. For whilst I was in a different state of life (*i.e.*, before he entered the Franciscan Order), I had written nothing on science; nor in my present condition had I ever been required to do so by my superiors; nay, a strict prohibition had been passed to the contrary, under penalty of forfeiture of the book, and many days fasting on bread and water, if any work written by me, or belonging to my house,

should be communicated to strangers. Nor could I get a fair copy made (*littera bona*) except by employing transcribers unconnected with our order; and then they would have copied my works to serve themselves or others, without any regard to my wishes; as authors' works are often pirated by the knavery of the transcribers at Paris. And certainly, if it had been in my power to have communicated my discoveries freely, I should have composed many things for my brother the scholar, and for others, my most intimate friends. But as I despaired of the means of communicating my thoughts, I forebore to commit them to writing. When, therefore, I professed to you my readiness, you must understand that it was for writings to be composed not for such as had been composed already. And, therefore, your chaplain, Raymond of Laon, was altogether mistaken when he made mention of me to your Holiness. For although I had at various times put together, in a hasty manner, some few chapters on different subjects, at the entreaty of my friends, there was nothing noteworthy in these writings; nothing of such a nature as I could think of presenting to your wisdom. They were such as I myself hold in no estimation, as being deficient in continuity and perfection."

Brewer points out that it is to Clement's credit that in an age of great political disorder, when the storm was still muttering, which had shaken mediaeval society to its basis, he retained his regard for philosophy. "He remembered in his exaltation the forgotten votary of science, labouring noiselessly at his thankless task. Nine-tenths of the world were perfectly content with the gross ignorance in which they were shrouded. . . . In his endeavour to comply with Clement's command, Roger Bacon had to contend with neglect from one side and opposition on the other. . . . . His own superiors violently opposed him: Why could he not be content to do as others did? Why trouble himself and the world about matters of which the world knew enough already? It enjoyed too much light. Philosophy had already reached its perfection." Bacon turned to friends of the Pope, the noble and wealthy; he writes: "I told them there was a certain business of yours to be done which I must needs get finished for you in France, and the execution of it would require a large sum of money. But how often I was looked upon as an importunate beggar (*improbus*); how often I was repulsed; how often I was put off; what confusion I suffered within myself, I cannot express to you. Distressed above all that can be imagined, I compelled my friends, even those who were in necessitous circumstances, to contribute what they had, to sell much of their property, to pawn the rest, to raise money at interest (*ad usuras*). And yet by reason of their poverty I frequently abandoned the work, frequently I gave it up in despair and forebore to proceed."

Yet within eighteen months, in spite of the jealousy of his superiors "who kept me on bread and water, suffering no one to have access to me, fearful lest my writings should be divulged to any others than the Pope and themselves" the *Opus Majus*, the *Opus Minus*, and the *Opus Tertium* were written and sent to the Pope. A feat, says Brewer, unparalleled in the annals of literature.

Little states that "Clement probably used his influence on behalf of Roger, as the latter seems to have returned to England about this time and to have been freed from annoyance. The works sent to the Pope, Bacon regarded merely as handbooks; at the same time that he was writing them he was engaged on a larger work which was to embrace the whole range of sciences as then understood. He was working at this in 1271. His attacks on all classes, including his own order, became even more violent than hitherto. In 1277 and 1278 synods were held at Paris and Oxford to condemn erroneous doctrines. The repressive movement extended to the Franciscans; in 1278 Jerome of Arcoli, the Minister General, held a chapter at Paris and among other friars, Roger Bacon was condemned (*propter quasdem novitates*). He is believed to have remained in prison for fourteen years. Jerome of Arcoli, who became Pope Nicholas IV in 1288, died in 1292. Raymond Gaufredi, a man of more liberal views, was elected General in 1289, and released many friars who had been imprisoned by his predecessors. In 1292 he held a general chapter at Paris, and it is probable that among the friars there set free was Roger Bacon. It is certain that the last work of his of which we have any notice *Compendium Studii Theologiae*, was written in 1292." The date usually assigned for his death (1294) is a pure conjecture. John Rous says that he was buried among the Friars Minors at Oxford.

Armed with the Papal authority Bacon "with the alacrity of a neglected scholar set to work to obey Clement's command; he was devoutly thankful for the opportunity of putting the results of his researches on record, and says as much in very extravagant and high-flown language."

He began with the *Opus Majus*, which work is divided into seven parts as follow: Part 1.—On the four causes of human ignorance: authority, custom, popular opinion, and the pride of supposed knowledge. Part 2.—On the causes of perfect wisdom in the Sacred Scripture. Part 3.—On the usefulness of grammar. Part 4.—On the usefulness of mathematics. This section is subdivided into four parts as follow: (*a*) The necessity of mathematics in human things. (*b*) The necessity of mathematics in divine things. This study has occupied holy men. Geography, chronology; cycles, the golden number, etc.; natural phenomena, as the rainbow; arithmetic; music. (*c*) The necessity of mathematics

in ecclesiastical things; the certification of faith; the correction of the calendar. (*d*) The necessity of mathematics in the state; climates; of hydrography; geography; astrology. Part 5.—On perspective (optics): (*a*) the organs of vision; (*b*) vision in straight lines; (*c*) vision, reflected and refracted; (*d*) *De Multiplicatione Speciarum* (on the propagation of the impressions of light, heat, etc.). Part 6.—On experimental science. I am at a loss to account for the seventh part in the above list, which is that printed by Brewer in the preface to his edition of the *Opus Minus*. It may have been on ethics, I cannot quite make out.

Having finished the *Opus Majus*, Bacon proceeded to the *Opus Minus*, which in substance followed the same order as the *Opus Majus*. It entered more fully than had been attempted in the *Opus Majus* into the examination of the state of scholasticism; it exposed the detriments to learning and philosophy occasioned by the exaggerated respect paid to Alexander ab Hales and a contemporary but unnamed professor. The *Opus Tertium*, though written last, was intended by its author to form a preamble to the *Opus Majus* and *Minus*. Brewer states that though it is "inferior to its predecessors in the importance of its scientific details and the illustration it supplies of Bacon's philosophy, it is more interesting than either, for the insight it affords of his labours, and of the numerous obstacles he had to contend with in the execution of the work. The first twenty chapters detail various anecdotes of Bacon's personal history, his opinions on the state of education, the impediments thrown in his way by the ignorance, the prejudices, the contempt, the carelessness, and the indifference of his contemporaries. From the twentieth chapter to the close of the volume he pursues the thread of the *Opus Majus*, supplying what he had there omitted, correcting and explaining what had been less clearly or correctly expressed, in that or in the *Opus Minus*. In Chap. 52 he apologizes for diverging from the strict line he had originally marked out, by inserting in the ten preceding chapters his opinions on three abstruse subjects: vacuum, motion, and space, mainly in regard to their spiritual significance. 'As these questions,' he says, 'are very perplexing and difficult, I thought I would record what I had to say about them, in some one of my works. In the *Opus Majus* and *Opus Minus* I had not studied them sufficiently to prevail on myself to commit my thoughts about them to writing; and I was glad to omit them, owing to the length of those works, and because I was much hurried in their composition.' From the fifty-second chapter to the close of the volume he adheres to his subject without further digression, but with so much vigour of thought and freshness of observation that, like the *Opus Minus*, the *Opus Tertium* may be fairly considered an independent work."

Bacon's name and works were anathema during the Middle Ages. Leland is quoted as having said that it is easier to collect the leaves of the Sibyl than the titles of the works written by Roger Bacon. Little states that many of those which have survived at all have reached us in a fragmentary state. In a footnote he refers to Twyne's statement that the friars at Oxford fastened all his works with long nails to the shelves of their library and let them rot there. Jebb, *Opus Majus*, ed. 1750, questions the accuracy of this statement; but it was not until about sixty years ago that any order was brought into the subject of Bacon's bibliography by the labours of Mr. Brewer and M. Charles. The references in Little[1] to works accepted or attributed to Bacon with comments on the same, occupy about 14 8vo. pages.

In an ophthalmic journal it would be out of place to refer at length to the major part of Bacon's writings and it must suffice if excerpts from his work on optics are reprinted here. As will be conceded by all who have read any account of him, his writings ranged over a very wide field, and the most remarkable thing about them is that he is always insisting on the practical rather than on the theoretical side of most questions. Bridges states: "No part of Bacon's work was more frequently translated than his *Perspectiva*. Based as it was upon the great work of Alhazen, which was itself a development of the *Optica* of Euclid and Ptolemy, and claiming indeed to be but an abridgment or condensation of the truths laid down by his predecessors with wearisome copiousness, it was in fact much more than this. It selected from a mass of propositions, many of them mere displays of geometrical ingenuity, precisely those which aimed at the interpretation of nature, and at the adaptation of the laws of luminous radiation to human purposes. He was aware of what was unknown to Ptolemy and Alhazen, the concentration of parallel rays from reflecting surfaces formed by revolutions of a conic section. . . . Of the magnifying powers of convex lenses Bacon had a clear comprehension. He imagined, and was within measurable distance of effecting the combination of lenses which was to bring far things near, but which was not to be realized till the time of Galileo."

The following paragraphs are taken by kind permission of the author, Dr. Charles Singer, from his article on the invention of the first optical apparatus, in Vol. II of "Studies in the History and Method of Science," 1921:

"The following passages will serve to indicate the stage he had reached in optical knowledge. It will be observed that in the first of the passages Bacon figures and refers to the *object* as though it were itself in the denser medium of which the lens is composed. He thus confuses the optical action of the lens with

that of a liquid in which an object is immersed. Perhaps he is led to do this by his knowledge that the optical results of immersion in a liquid had been investigated by his predecessors, or perhaps by their descriptions of the process of vision as taking place within the supposed central crystalline sphere of the eye. It is also apparent that he does not realize the refractive action of the *plane* surface of his plano-convex lenses.

"If anyone examine letters or other minute objects through the medium of crystal or glass or other transparent substance, if it

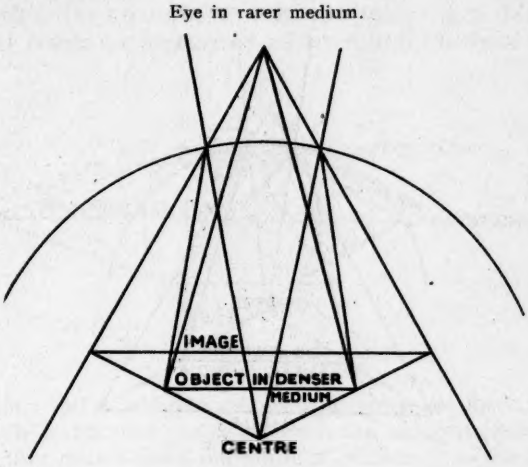


FIG. 4.

be shaped like the lesser segment of a sphere, with the convex side towards the eye, and the eye being in the air, he will see the letters far better, and they will seem larger to him. For according to our canon (Fig. 4) concerning a spherical medium beneath which the object is placed, the centre being beyond the object, the convexity being towards the eye, all causes agree to increase the size, for the angle in which it is seen is greater, the image is greater, and the position of the image is nearer, because the object is between the eye and the centre. *For this reason such an instrument is useful to old persons and to those with weak eyes, for they can see any letter, however small, if magnified enough.* But if a larger segment of a sphere be employed, then, according to our canon (Fig. 5) the size of the angle is increased, and also the size of the image, but propinquity is lost because the position of the image is beyond the object, the reason being that the centre of the

sphere is between the eye and the object seen. Therefore such an instrument is not of so much use as the smaller portion of a sphere.

"Objects are greater when the vision is refracted; for it easily appears by the above-mentioned canons that very large objects may seem to be very small and conversely, and those at a great distance away may seem very near and conversely. For we can so form glasses and so arrange them with regard to our sight and to objects that the rays are refracted and deflected to any place we wish, so that we see the object near at hand or far away beneath

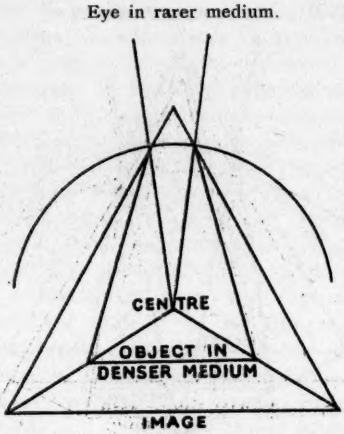


FIG. 5.

whatever angle we desire. And so we can read the smallest letters or count grains of sand or dust from an incredible distance owing to the magnitude of the angle beneath which we see them, and again the largest objects close at hand might be scarcely visible owing to the smallness of the angle beneath which we view them; for *it is on the size of the angle on which this kind of vision depends, and it is independent of distance save per accidens.* So a boy can appear a giant, a man seem a mountain, and in any size of angle whatever, for we can see a man under as large an angle as though he were a mountain and make him appear as near as we desire. So a small army might seem very large, and though far away appear near, and conversely: *so, too, we could make sun, moon, and stars apparently descend here below,* and similarly appear above the heads of our enemies, and many other similar marvels could be brought to pass, that the ignorant mortal mind could not endure the truth." (*Opus Majus*, Part 5.)

"As to double refraction, what is causally manifest with regard to it we can verify in many ways by the results of experiment. For if anyone holds a crystal ball or a round urinal flask filled with water in the strong rays of the sun, standing by a window in face of the rays, he will find a point in the air between himself and the flask at which point, if any easily combustible substance is placed, it will catch fire and burn, which would be impossible unless we suppose a double refraction. For a ray of the sun coming from a point in the sun through the centre of the flask is not refracted, because it falls perpendicularly on flask, water, and air passing through the centre of each (Fig. 6). . . . But all the other rays given forth at the same point in the sun from which this perpendicular ray comes are necessarily refracted in the body of the flask,

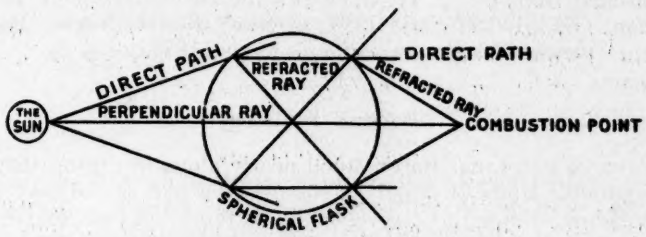


FIG. 6.

because they fall at oblique angles, and since the flask is denser than air, the refraction passes between the straight path and the perpendicular drawn from the point of refraction to the centre of the flask. And when it passes out again into the air, then, since it comes upon a less dense body, the straight path passes between the refraction and the perpendicular drawn from the point of refraction, so that the refracted ray may fall upon the first perpendicular which comes without refraction from the sun. *Now since an infinite number of rays are given off from the same point of the sun, and one only falls perpendicularly on the flask, all the others are refracted and meet at one point on the perpendicular ray which is given off along with them from the sun, and this point is the point of combustion.* On it are collected an infinite number of rays, and the concentration of light causes combustion. But this concentration would not take place except by double refraction, as shown in the diagram." (*Opus Majus*, Part 7.)

"*Glasses (perspicua) can be so constructed that objects at a very great distance appear to be quite close at hand, and conversely.* Thus we read the smallest letters from an incredible distance, number objects however small, and make the stars appear as near

as we wish. . . . Also objects can be made to appear so that the greatest seems the least, and conversely; what are high appear low and short, and conversely; and what is hidden appears manifest. . . But among the more subtle powers of construction is this of directing and concentrating rays by means of (instruments of) different forms and reflections at any distance we wish, where whatever is subjected to them is burned. . . . But greater than any such design or purpose is that the heavens might be portrayed in all their length and breadth on a corporeal figure moving with their diurnal motion, and this would be worth a whole kingdom to a wise man. Let this, then, be sufficient as an example, although an infinite number of other marvels could be set forth." (*De Secretis Operibus Artis et Naturae.*)

Dr. Singer states in a footnote that the above passages are translated from Dr. J. H. Bridges's the *Opus Majus* of Roger Bacon, Oxford, 1897, and J. S. Brewer's *Fratris Rogeri Baconi opera quaedam hactenus inedita,* London, 1859.

### Bacon's Philology

Bridges states that Bacon stood nearly alone in urging that the comparative study of language should form part of the university curriculum, although he gives credit to those, and particularly to Grosseteste, who had promoted the translation of Greek books into Latin; but it does not appear that before him, anyone had proposed to carry the study of language, as such, beyond the routine of grammar presented in the Trivium;* the Latin accidence and syntax of Priscian or old Donatus.† Bacon proposed a systematic and comparative study of Hebrew, Arabic, and Greek, with the dialects belonging to each. Bridges states that so far as he knew no work of Bacon's affords evidence of knowledge of Arabic; but Steele, in Fasc. 5 of the *Opera hactenus inedita Rogeri Baconi,* 1920, prints the text of the *Secretum Secretorum,* edited by Roger Bacon, with his introductory treatise and glosses. In the same volume is incorporated a literal translation of the original Arabic "to serve as a key to the Latin, and at the same time to show the remarkable accuracy of the original translation and the variation it has undergone." If Bacon was able to edit this work of Aristotle he must have had a working knowledge of Arabic, unless of course he had access to a copy in Greek, which as far as I can make out seems unlikely. That he knew Greek is evident from the elementary Greek grammar written by him.

*Grammar, rhetoric and dialectic in contradistinction to the Quadrivium, which comprised arithmetic, geometry, music, and astronomy.

†Donatus, on the eight parts of speech.

Bridges raises an interesting point as follows: "A point of interest presents itself as to Bacon's pronunciation of Greek. Much attention is given to the transliteration of the Greek alphabet into its Latin equivalents. The Lord's Prayer, the Salutation to the Virgin, and the Apostles' Creed are written out in Latin, underlined first with the Greek words in Roman characters, and secondly with the same words in Greek. The second of these is given as an example:

Ave Maria graciosa dominus cum tui benedicta
xere Maria kecharitomeni o kirios meta su eulogimeni
*χαῖρε μαρία κεχάριτωμένη ὁ κυρίος μετὰ σοῦ ευλογήμένη*

tu in mulieribus et benedictus fructus ventris tui
si en ginexi ke eulogimenos o karpos tis kilias su
*σὺ ἐν γιναιξὶ καὶ ευλογίμενος ὁ καρπος τῆς κοιλίας σοῦ*

amen.
amin.
*ἀμήν.*"

In urging so strongly the study of language Bacon had two main purposes in his mind: (*a*) an improved text of the Bible; (*b*) an intelligible translation of the works of Aristotle.

One of the first, if not the first, of Bacon's works to be translated into English was his "Cure of old age, and preservation of youth," which was published by Dr. Richard Browne in 1683. Chapter I, of the causes of old age begins as follows: "As the world waxeth old men grow old with it: not by reason of the age of the world, but because of the great increase of living creatures which infest the very air, that every way encompasseth us, and through our negligence in ordering our lives, and that great ignorance of the properties which are in things conducing to health, which might help a disordered way of living, and might supply the defect of due government.

"From these three things, namely, *infection*, *negligence*, and *ignorance* the natural heat, after the time of manhood is past, begins to diminish, and its diminution and intemperature doth more and more hasten on. Whence the heat by little and little decreasing, the accidents of old age come on, which accidents in the very flower of age may be taken away; and after that time may be retarded; as also may that swift course, which hurries a man from manhood to age, from age to old age, from old age to the broken strength of decrepit age, be restrained."

No one can begin to read much about Bacon without at once realizing the fact that he is apt to repeat himself. The preamble,

the *Opus Tertium*, was the last of the three works to be written for the Pope. Steele, in his edition of the *Metaphysica Fratris Rogeri, Opera hactenus inedita Rogeri Baconi*, speaks of Bacon's inveterate habit of using his material two or three times over.

I do not intend to give the impression that I have studied the works of Bacon, save superficially, for the purpose of this memoir; I am sure that the superficiality of my knowledge will be patent to all deep Baconian students, and hope that ophthalmologists who may read this paper will not give me credit for more learning than I possess. I believe the facts given here are accurate as far as they go; they are all *copied* from published sources of information.

*Eheu! Rogere*, Alas! Roger, the ways of a scientific minded man were indeed hard in the thirteenth century. The bare-footed friar (the Franciscans first appeared in this country in 1224) wore a coarse grey gown with a rope round his middle, while his feet were entirely unshod. His order was addicted to penury, but so far as I am aware, the dietary, though simple was abundant, and he was not condemned to silence. If in spite of these corporeal disadvantages the friar showed any sign of having thoughts out of the usual, he was promptly accused of having dealings with the evil one and clapp'd into prison for his pains. It is a pleasing thought that in spite of neglect, of obloquy, and hardship, Roger Bacon refused to be muzzled, and that he went on to the end of his long life, writing, always writing and thinking about three centuries ahead of his time; one of those who

> *inventas aut qui vitam excoluere per artis,*
> *quique sui memores aliquos fecere merendo:*
>
> VIRG. AEN. VI.

In conclusion I must state that in addition to the references mentioned in the text I have quoted freely from Brewer's edition of the *Opus Minus* in the Rolls Series, 1859.

The frontispiece, Roger Bacon's statue in the University Museum, at Oxford, by Mr. Hope Pinker, is reproduced, by permission, from a photo supplied by Messrs. Gillman & Co., Oxford.

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# A CASE OF ANEURYSM OF THE ANTERIOR CEREBRAL ARTERY CAUSING COMPRESSION OF THE OPTIC NERVES AND CHIASMA

BY

S. TAYLOR HARRIS

LONDON

ANEURYSMS are among the rarer causes of compression of the optic nerves and chiasma, and although a case was described in this journal by Conway in 1926[3], it is of interest to add another, recently observed, to the scanty literature on the subject.

As long ago as 1833 Stilling[9] described the case of a woman, aged 42 years, who suddenly fell unconscious in the street. She regained consciousness one hour later and was then blind. It is recorded that her pupils were dilated and scarcely reacted to light. She died twenty-four hours later, and at the autopsy a tumour of the size of a walnut was found on the base of the brain, indenting the floor of the third ventricle and the tuber cinereum, and compressing the chiasma. It took origin from the right carotid artery. In this case, as in many of those since recorded, the visual symptoms were only terminal; in fact, frequently, as Beadles[1] has remarked, aneurysms in this position have produced no visual symptoms although they have compressed the optic nerves or the chiasma.

Hutchinson[5] also recorded a case in which sudden loss of sight developed only a short time before death. Here the aneurysm grew from the basilar artery, and extending forwards through the interpeduncular space, compressed the chiasma and the optic nerves.

Those cases in which the aneurysm caused visual symptoms for a long period before death are of more interest to the ophthalmologist.

Byrom Bramwell[2] records the case of a man, aged 31 years, who had been an inmate of an asylum for two years. At the age of 16 years he fell from a horse and had been mentally dull since then. Vision had begun to fail about two years before he came under observation. Then Sir George Berry observed double optic atrophy, considerable reduction in central vision and bitemporal hemianopia, which was complete in the left eye and partial in the right eye. After this vision improved considerably, but again deteriorated so that when he was finally examined he had a complete bitemporal hemianopia and some loss in the left nasal field. An aneurysm the size of a small orange was found attached to the right internal carotid artery, which had eroded the base of the skull to the size of an egg in the region of the sella Turcica. The

left optic nerve was stretched over the aneurysm as a flattened band.

Weir Mitchell[7] records a case of a man, aged 43 years, in whom vision of the left eye had been failing gradually for two and a half years and that of the right eye for two years. Both discs were atrophic, and the temporal sides of each visual field were lost. A large aneurysm was found embedded in the sella Turcica, which had been eroded. The chiasma had disappeared and no evidence that it had been ruptured could be found. It was assumed that the aneurysm grew from an abnormal artery connecting the two internal carotids below the chiasma.

Kummell's case[6] was one of a man, aged 37 years, whose vision had failed from each temporal side for the past three or four years. For a year the right eye had been blind, and in the left a little vision remained only in the lower nasal quadrant. He had had repeated apoplectic attacks, but no signs of involvement of the nervous system were present. A radiographic examination showed flattening of the sella Turcica. At the autopsy an aneurysm the size of a plum was found on the base of the brain. It consisted of two parts, the anterior of which had eroded the floor of the anterior fossa of the skull, and a posterior part, as large as a walnut, which compressed the chiasma and the optic nerves. The aneurysm had eroded the sphenoid, extended into the sphenoidal sinus, and was separated from the naso-pharynx by mucous membrane only. The pituitary body could not be discovered, and the exact origin of the aneurysm could not be determined.

Freund[4] describes the case of a man, aged 70 years, who had had tabes dorsalis for several years. Eight years before he came under observation right-sided homonymous hemianopia had gradually developed. He had not complained of headaches nor of noises in his head. At the autopsy a spindle-shaped aneurysm, the size of a large hazel nut, which grew from the left internal carotid artery, was found compressing the optic tract.

The history of my case was as follows:

M.P., aged 46 years, a married woman, was admitted to Charing Cross Hospital, under the care of Dr. Gordon Holmes, on November 11, 1926.

She had always been delicate, but had had no illness of consequence, except an attack which she called a "nervous breakdown" seven years ago. This set in suddenly with double vision while she was travelling by train; she actually stated she saw six or seven images of every object at which she looked. The double vision lasted several months, and for a period of five months at least she was so ill that she attended a hospital, but she cannot remember

what her symptoms then were, except that she had headaches and that she was very depressed.

In April, 1926, she noticed that her vision was defective, and about the same time she began to suffer with severe headaches. Vision deteriorated rapidly, so that in June, when she was seen by Mr. E. Brewerton at the Royal Westminster Ophthalmic Hospital, she could read 6/60 only with the left eye, and the vision of her right eye was even less. Her fundi were normal and her discs were of good colour, her right visual field was contracted concentrically to about 30°, and there was a large defect in the nasal part of the left field, especially in the upper quadrant; some loss of colour vision was also noted. She was instructed to attend the ophthalmic hospital again that her fields of vision might be more accurately charted, but she failed to do so. From this time she attended the out-patient department of Charing Cross Hospital, complaining mainly of intense headaches. Her vision continued to deteriorate, and early in August she became quite blind; a few weeks later her sight returned, but she then found she was unable to see objects to her right side. In November the headaches became more severe, and were then chiefly in the left frontal region. At the same time she became drowsy and could be roused only with difficulty.

On admission to hospital she was a small, thin, pale, and ill-looking woman. She still suffered with headaches, especially in the left frontal region. She was drowsy, but her mental state was otherwise normal. Her heart was normal and her pulse regular and soft, but often slow, sometimes falling to under 60 per minute; the walls of the radial vessels were not thickened. The urine contained no abnormal constituent. The Wassermann reaction was negative in both her blood and cerebro-spinal fluid, and the latter contained no excess of cells or globulin.

There was no disturbance of speech and her memory was good. The ocular movements were normal and her pupils contracted on convergence, but the left pupil did not react well to light. The functions of her other cranial nerves were unaffected, and there was no paresis, alteration of tone, ataxia or involuntary movements in her limbs. Sensibility to tactile, painful and thermal stimuli was normal, and all her reflexes were present and unaltered, the plantars being flexor in type.

The vision of her left eye was very defective, in fact she could recognize large moving objects only in a small portion of the temporal field; central vision was lost. Unfortunately, the acuity of central vision in the right eye was not measured accurately, but she was able to recognize persons and objects in the ward and to read medium-sized print. In this eye the nasal field was almost full, but there was a complete temporal hemianopia, the blindness

extending almost up to the fixation point. The chart (Fig. 1) represents the field of the right eye as taken with a 10 mm. object on a perimeter at a distance of 30 cms.; the left field is only an estimation from tests by rough methods as she was not able to see the fixation point.

Both discs were now very pale, more particularly the left; the central pits were deep and shelving, and there was some pigmentary disturbance on the inner border of the right disc. The retinal arteries and veins were normal in size.

A radiographic examination of her head revealed no change in the sella Turcica and no shadows in its neighbourhood.

While in hospital she complained of very intense headache, which she referred to the left side of her forehead and her left eye. She was also troubled with nausea, but did not vomit. No other change in her state occurred till December 16, when she suddenly sat up in bed, cried out that she had become blind, and immediately fell back unconscious. Her pupils were at first small, but after about eight hours they began to dilate, the right becoming fully dilated. A lumbar puncture at this time provided fluid strongly mixed with blood. She died without regaining consciousness about twenty hours after the attack.

*Autopsy*.—The whole surface of the brain was covered with blood. Part of it lay in the subarachnoid space, but some was over the arachnoid and was easily washed off. The third and fourth ventricles also contained blood. On raising the brain from the base of the skull a large tense swelling was found between the inner aspects of the two temporal lobes and in front of the pons. The optic nerves were stretched over its anterior and inferior surfaces and displaced to the left. The right nerve was flattened into a band; the left also was compressed and oval on section. By cutting round the dural roof of the sella Turcica the pituitary gland was removed intact with the infundibulum, which projected up from the left side of the tumour. As seen from the inferior surface, the tumour was spherical and measured from 2.5 cms. by 3 cms. across.

The brain was divided by mesial sagittal section (Fig. 2) through brain-stem and the corpus callosum; the section divided the tumour approximately in half, though it projected farther into the angle between the inner aspect of the temporal and frontal lobes on the right side than on the left. It was filled with firmly clotted blood, the removal of which revealed a glistening surface resembling that of the inner side of a large artery, with some small patches of atheromatous-like thickening. There was a large rent on the posterior surface of the tumour where it lay against the anterior surface of the pons. This was the site of rupture. At about the middle of the left lateral aspect of the tumour there was a small

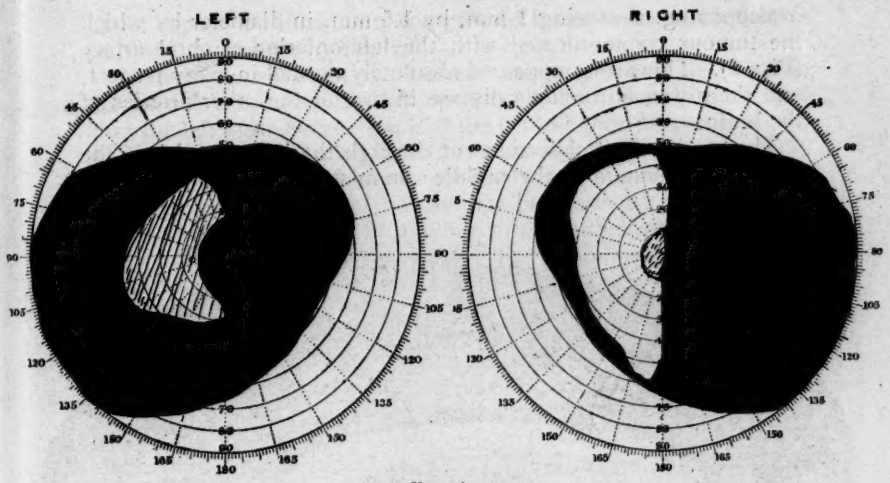


FIG. 1.

FIG. 2.

oval opening measuring 1 mm. by 1.5 mm. in diameter by which the tumour communicated with the left anterior cerebral artery (Fig. 2). This artery appeared absolutely normal in every respect, and there was no obvious disease in any of the other arteries of the brain.

The mesial sagittal section cut through the inner border of the left optic thalamus at the middle commissure, as this portion of

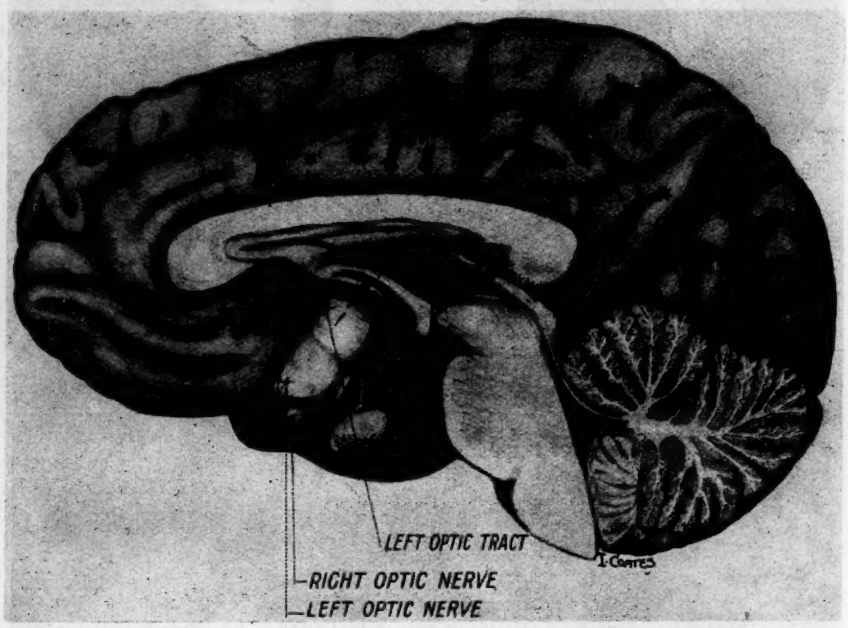


FIG. 3.

the brain was, by pressure, displaced to the right. On the other hand the third ventricle was flattened out and displaced towards the right, so that a probe inserted into it lay at an angle of about 45 degrees to the mesial sagittal plane. As a result of this the recessus infundibularis lay on the right side of the tumour. On raising the right side of the tumour (Fig. 3) the right optic nerve and the chiasma were found flattened out and displaced to the right. The chiasma particularly was flattened into a lamina about two millimetres thick. The right optic tract apparently passed back undisturbed by the tumour, while the left tract was a flattened lamina measuring 12 mm. by 2 mm., which lay on the outer and

upper aspect of the tumour, compressed between it and the lateral wall of the third ventricle.

From the position of the tumour one might assume that the pressure first affected the left optic tract, then the chiasma, and later the left optic nerve. Each of the oculo-motor nerves appeared on the lateral and inferior aspect of the tumour. The fourth nerves ran more laterally and were apparently not involved by it; the sixth nerves unfortunately could not be dissected out from the dense clot surrounding the tumour after hardening in formalin. The pituitary body was apparently not compressed or otherwise involved. There was no evidence of any serious compression of any other part of the brain.

A microscopical section of the wall of the tumour showed typical vascular tissue with a discontinuous layer of elastic fibres. There were a few small patches of atheroma on its inner aspect.

A few features of this case require discussion. The headache and double vision which characterized the illness of seven years ago were probably due to a small rupture in the aneurysm; the history of many of these cases shows that such sudden attacks occur. They were more commonly due to rupture of the aneurysm, but in some cases the symptoms were probably the result of a sudden swelling of it. In most of the cases headache is a prominent feature, but was absent in some, as in Freund's.

In our case a radiographic examination revealed no change in the sella Turcica and no shadows. Sosman[8] refers to the fact that in ten out of twenty of the cases of aneurysm at the base of the brain, shadows were seen by X-rays, but only when advanced arterio-sclerotic changes were present. It might be expected from the position occupied by aneurysms that press on the chiasma or optic nerves that ocular palsies would be frequently present, but there is no mention of them in some of the recorded cases. Other neighbouring symptoms might be also expected. In our case no symptoms referable to the pituitary gland were observed, and this has been so in many other cases too. In Kummell's case, however, there was abnormal adiposity, loss of sexual power and other so-called pituitary symptoms.

The variability in visual symptoms which were present in our case might be perhaps regarded as a feature by which the aneurysm could be distinguished from other tumours involving the chiasma and optic nerves. In the cases of Bramwell and Conway a temporary improvement of vision had also occurred. A variability of visual disturbance, however, is not uncommon in pituitary tumours, and Dr. Gordon Holmes has informed me of an unpublished case of endothelioma compressing the chiasma in which vision improved.

Although the pathogenesis of these aneurysms scarcely comes

into the scope of this paper, it may be briefly remarked that in Freund's case it was most probably syphilitic in origin; in Hutchinson's it was associated with septic endocarditis, and in Bramwell's there was a history of severe cerebral trauma. In my case, however, as in Conway's and others, syphilis could probably be excluded, and there was no arterio-sclerosis or other pathological lesion of the vessels. It is probable that a local congenital weakness of the wall of the artery was the most important factor.

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# A BEND IN THE SIXTH CRANIAL NERVE—AND ITS PROBABLE SIGNIFICANCE


BY

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LONDON


THE weakling of the cranial contents, the sixth nerve may be affected in almost any type of cerebral lesion. It is thus notorious, *if involved alone*, for having no localizing value.

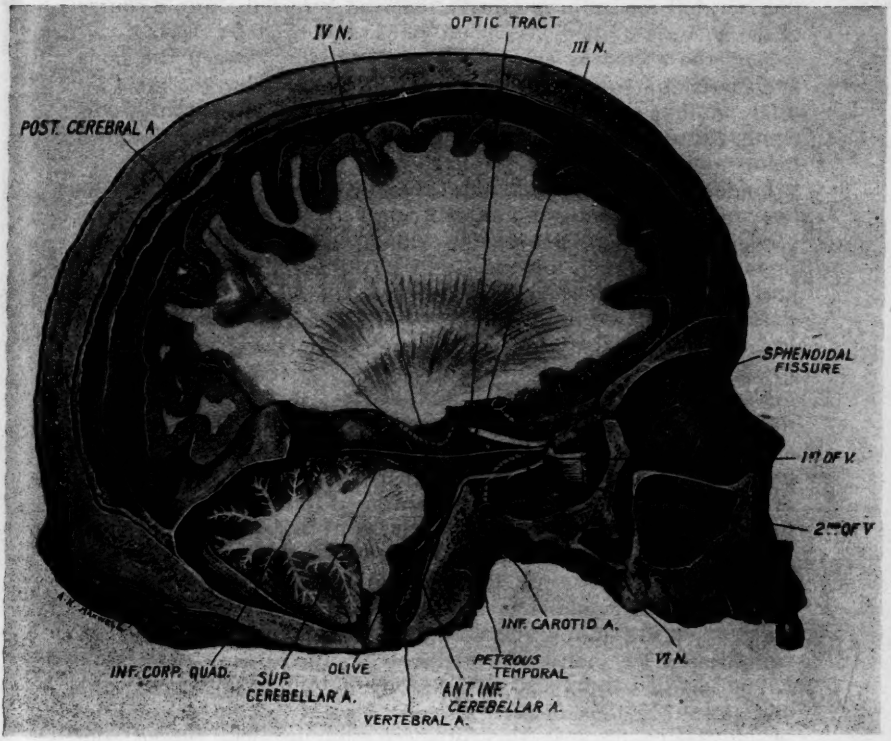
To quote Uhthoff[1]: "Unilateral paralysis of the rectus externus may usually be considered as a pressure or distant symptom in tumour cases especially if incomplete. It often affords no data as to the localization of the process as is shown by the diminution of the paralysis after decompressive operation. It is not justifiable from the unilateral distribution of the paralysis of the external rectus to conclude that the seat of the tumour is on the same hemisphere. I have had cases confirmed by autopsy where the tumour was contralateral."

Many theories have been evolved to account for this.

Collier[2] thought that it was due to a shifting backwards of the brain stem. Those nerves whose direction was most nearly fronto-caudal would be involved before the others. Thus the sixth would be first, then the third, and lastly, the seventh and eighth.

But Cushing[3] points out that mere traction or elongation of the nerve does not produce palsy—as is seen especially in cases of cerebello-pontine tumour where the seventh nerve is often stretched to twice its length without resultant facial palsy.

Also if the above were correct why does the frailer fourth nerve with its longer antero-posterior course escape? The answer usually given is that it is protected by the free margin of the tentorium cerebelli in which it lies for part of its course, an explanation that will hardly hold for an antero-posterior pull. It is obvious there must be some other factor.




Professor Cushing[3] showed that the antero-inferior cerebellar artery, when it ran ventral to the sixth nerve (a relation present according to Stopford[4] in 86 per cent. on the right side and 81 per cent. on the left) might as a result of increased intracranial pressure press on and groove the nerve and the underlying pons. A similar pressure may be produced by the internal auditory artery.

Now, doubtless in some cases this may result in palsy of the nerve. But the arteries are normally small soft structures and they press the nerve into the softish brain substance. Hence the

grooving of the nerve and the pons does not necessarily mean a palsy of the abducens.

One somehow feels that the structure producing the pressure must be of a firmer consistency.

It is my endeavour in this note to show that such a structure exists. The sixth nerve is usually regarded as having a long straight antero-posterior course. This fallacy, I think, arises from the fact that the brain is usually removed before the whole course of the nerve is studied.

Now the abducens emerges from the brain between the pons and the lateral part of the pyramid. It is *attached* to the pons for a few millimetres then runs upwards, forwards, and slightly outwards between the pons and the occipital bone to pierce the dura below and to the inner side of the fifth.

Under the dura it runs almost vertically up the back of the apex of the petrous temporal. Having arrived at the *sharp* upper border of this bone, it bends forwards, under the petro-sphenoidal ligament of Gruber, practically at a right angle to run almost horizontally forwards in the cavernous sinus.

Here it is placed to the outer side of the carotid artery to which it is held by communications from the sympathetic plexus (see Fig.).

Now if we consider a tumour in any position in the cranium there will come a time when owing to the increase in the intracranial pressure the brain will be forced to its largest outlet, the foramen magnum, and foraminal herniation ensue. As a result of this the medulla and the pons will tend to move downwards.

Now the sixth nerve is fixed to the pons and more or less held in the cavernous sinus. It will therefore be pressed against the sharp upper border of the petrous temporal with resulting interruption of conduction and palsy of the external rectus.

Blows on the vault of the skull, quite apart from those which are complicated by basal fractures involving the apex of the petrous temporal will I think also tend to force the hind-brain downwards with resulting tension on the sixth nerve. A similar condition of movement towards the foramen magnum will follow compression of the skull in a difficult labour with or without forceps and explain the sixth nerve birth palsy.

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# WEBSTER'S OPERATION FOR ENTROPION OF THE UPPER LID

BY

ALEX. MACRAE, M.D., D.O.M.S.

NEWCASTLE-ON-TYNE

AT least forty different methods have been devised of operating for the relief of entropion of the upper lid. My excuse for adding to this formidable list is the belief that the method I describe which, so far as I am aware, is almost unknown to ophthalmic surgeons in this country, is superior to them all.

If any enthusiast for another method is inclined to challenge this statement let me ask him this—has he never had bad results, either functional or cosmetic, from his entropion operations? My own experience of other operations for entropion of the upper lid has not been a happy one; and when I say that the operation I describe, and which I have performed many hundreds of times, has always in my hands been successful, and has never given any trace of deformity or a bad cosmetic result; and that, if recurrence did take place, it could be repeated without difficulty, I think I have some grounds for claiming it to be the best yet devised.

I make no personal claim in the matter. The operation was not invented by me and though it is possible that experience may have slightly modified my technique from that which I was taught, the essential features of the operation are not original. I am writing in the hope that what I consider the best operation for this condition may find its way into the text-books and displace many of the old (some of them barbarous and mutilating) procedures which are still described.

MacCallan, whose twenty years' experience as Director of Ophthalmic Hospitals in what is probably the most trachomatous country in the world, gives him some right to speak with authority, tells in a recent paper[1] how on arrival in Egypt he found the methods he had learnt at home inadequate, and was put in the humiliating position of having to learn better methods from his subordinates. In the course of these twenty years he came to adopt three alternative operations for entropion. They were:

(1) A modified van Millingen in which the lid margin is split by an incision in the grey line and a flap of mucous membrane from the lip inserted in the gap.

(2) The Snellen-Streatfeild operation—in which a wedge is taken from the tarsal plate through an incision on the skin surface of the lid.

(3) The combined excision operation—in which the whole plate is removed through the conjunctival surface of the lid.

Now, however excellent these operations are in the hands of an expert, if badly performed each of them may lead to considerable deformity.

van Millingen's operation at best thickens the margin of the lid and if healing is irregular may give anything but a pretty result. It does not deal with the cause of the deformity—the distorted tarsal plate; and in common with all operations in which the lid is split in the grey line there is the risk of some of the hair bulbs remaining in the posterior half of the split lid.

The Snellen-Streatfeild operation I have known to cause most unsightly defects in the lids: while even so warm an advocate of "combined excision" as Maynard[3] acknowledges that the slightest irregularity in the final stitching may cause bad cosmetic effects not easily repaired.

The operation I describe is practically fool-proof. Even if the graft should fail to "take," owing to carelessness or want of skill in getting it into position, no harm is done: the lid is not distorted, neither skin surface nor lid margin has been touched by knife or suture and the patient is no worse off than before. He is indeed in the position of one who has had the original Burow's operation performed, and is at least temporarily benefited, and in no way disfigured.

Perhaps it may be thought that I lay too much stress upon cosmetic results. If your operation relieves a man of the misery caused by cilia rubbing on his cornea, he may be grateful, however ugly his lid may look. But even so, a notched and distorted lid (no uncommon result after many entropion operations) may be almost as great a menace to his sight as the trichiasis; if on closing the lid any gap is left, the cornea is not properly protected either during waking hours or when asleep; while a rough or irregular lid margin may cause as much injury to the sensitive cornea as the inturned lashes did.

Besides, a considerable proportion of one's patients in trachomatous countries are women, and as no defect is more apparent than a mis-shapen eyelid, an operation which cures the trichiasis but leaves deformity, will lower your patient's value in the marriage market and may be the cause of life-long misery.

The method was taught me, some eighteen years ago, during a visit to Beyrout, by Dr. Webster, Ophthalmic Surgeon in the American College there. He had invented it twelve years before and had been so pleased with his results that he had abandoned all other procedures.

The method which I describe is that which I came to use; whether or not it conforms in every way with Dr. Webster's I cannot remember. It differs from most of the methods which

employ a similar incision in that no stitch at all is applied to the eyelid.

From the day I learned it, until I left Arabia ten years later I used no other method, and in many hundred operations I do not know of any failure.

### Details of Operation

The patient is prepared for a general anaesthetic. I have no doubt the operation could be done under local anaesthesia but a general anaesthetic makes it easier. The face and eyelids are cleaned with, say, 1/40 carbolic, paying particular attention to the lid margins; and the conjunctival sac is thoroughly washed out with hydrarg. perchlor. sol. 1 in 4,000.

A Snellen's entropion clamp is used reversed: the left-sided clamp being used for the right eye and *vice versa*. The flat plate of the clamp is applied to the skin surface of the lid the open arm to the conjunctival surface, and the lid everted. The outer end of the lid is grasped with toothed forceps and pulled outwards until the punctum is just visible in the portion of the lid included in the clamp. The clamp is then screwed tight. An incision is now made in the conjunctival surface of the lid parallel to the lid margin and about 3 mm. from it. This incision goes from end to end of the lid and goes right through the tarsal plate. It is not advisable to go so deep as to button-hole the skin surface but no great harm is done if this accident happens. The important point is that the tarsal plate must be completely divided. At each extremity of the lid the incision is curved a little forwards *towards* the lid margin, but it must stop short of the actual margin, or the cosmetic result will not be so good. At the inner extremity this forward curve should end just external to the punctum. It may not be possible, even if a large clamp is used, to complete the outer end of the incision without moving the lid in the clamp, but this is easily done by grasping the lid with toothed forceps, the clamp being slightly slackened meanwhile.

A stout Graefe knife is quite adequate for the incision but a short and narrow bladed scalpel (*e.g.*, a Landolt's with middle points or a chalazion knife such as Messrs. Weiss make) is easier to control.

On completion of the incision the wound is carefully inspected to see that no hair roots have been left in the proximal part of the lid. If the incision is made 3 mm. from the border there should be none; but if at any point it has got too near some may be left and in any case it is wise to look for them. If any are seen they are carefully dissected out.

The clamp is now removed; the lid is replaced and a large moist pad pressed on it. Bleeding is at first free but has stopped by the

time it is necessary to proceed with the final stage of the operation on the lid.

If both eyes are affected the other lid is incised in the same way and in its turn covered with a pad.

The inner surface of the lower lip is now cleansed by an assistant and held everted. The operator picks up a point of mucous membrane towards the angle of the mouth with toothed forceps held in his left hand, and with scissors, preferably curved on the flat, rapidly cuts a strip of mucous membrane of somewhat more than the length of his lid incision and 4 mm. or 5 mm. broad. The wound in the lip is immediately sutured by an assistant with a continuous suture. If no assistant is available it may be clamped and dealt with later.

The strip of mucous membrane is now laid on the palmar surface of a finger of the operator's left hand, raw surface exposed. From the raw surface the fat and submucous tissue are carefully removed, with, *e.g.*, iris scissors curved on the flat, until the strip is so thin that it is difficult to tell which surface is which. This is the most troublesome and tedious part of the operation, as it is easy to button-hole the delicate graft and so render it useless, necessitating the cutting of another graft. It is important to perform it thoroughly, as the thinner the graft the better apposition can be got with it, and the more certain it is to "take." When sufficiently thin its sides are trimmed parallel and the ends pointed. The graft may now be transferred, till wanted, to a bowl of warm saline lotion or may be kept on the finger if the operator is not likely to forget it and let it be rubbed off during the next stage. Keeping it on the finger with the raw surface exposed saves one straining one's eyes later on to make out which is the raw surface.

The pad is now removed from the eye, blood wiped away and the lid everted. The line of the incision will be found filled with clot. The bulk of this is very gently removed by forceps or by swabs so as not, if possible, to restart the haemorrhage. The graft is then placed in position, convenient instruments for this purpose being a pair of fine-pointed, light, dissecting forceps and an iris repositor. If found to be too long it is shortened. Finally, it should lie in, and covering the groove made by the incision, the pointed ends lying in the two curved ends of the groove, care being taken that it is pressed well down on to the lid and that its edges are not curled in. It does not matter if the *sides* of the graft over-lap the sides of the groove, in fact it is probably better that they should; but the *points* must lie in the groove, as otherwise they are apt to get out of position on closing the eye. If any bleeding has restarted on removing the clot, it will cease as soon as the flap is in position.

The lid, which has been everted, is now gently replaced. The lid margin is then cautiously raised with the finger and the conjunctival surface inspected to make sure that the graft has not been displaced in the act of replacing the lid. If it has, it is smoothed into position by the iris repositor without again everting the lid. A pad and bandage are then applied.

I used to dress the eyes daily, the first two or three dressings being done as gently and carefully as a first dressing after cataract extraction, to prevent any displacement of the graft. Possibly MacCallan's method of applying a thick layer of sterile boric ointment, and leaving for some days would do as well. It would save time. I describe what I have done.

If the operation and the subsequent dressing have been done as detailed above, the graft will invariably remain in position and "take." As the lid margin has not been interfered with and no stitches have been inserted there is no possibility of disfigurement. The bandage may be left off after the fifth day and a few days later it is quite safe to evert the lid to carry on any treatment thought advisable, if active trachoma is still present.

### Operations resembling Webster's

Somewhat similar operations have been described at various times.

The principle of dividing the tarsal-plate parallel to the lid margin from the conjunctival surface we owe to Burow[3], though his method of making the incision differs from that described. Burow's whole operation consists in the incision. This always gives temporary and sometimes permanent relief, but naturally when it heals there is often recurrence. No effort was made to keep the wound gaping nor to fill it in with a graft.

An incision similar to Webster's is made in the operations associated with the names of Williams[4], Lagleyze[5], Green[6], and Ewing[7]. In none of these operations is a graft inserted; the wound is kept gaping by means of sutures applied in various ways.

Two other operations bear more resemblance to Webster's, *viz.*, those of Gifford and Maher. Gifford[8] applied a graft without suturing as in Webster's operation, but he described his incision as going nearly through the tarsal plate; and the terminal portions, which are at 45° to the main incision, end between the cilia. This, I think is a mistake, as it notches the all important posterior border of the lid margin. Another possible cause of deformity is his method of making the wound gape (probably necessary because his incision does not go completely through the tarsal plate) by placing a pad along the skin surface contiguous to the lashes and tying sutures over it from above and below.

Maher[9] in 1897 described an operation very similar in its essentials to Webster's—the main differences being: (1) that his incision is made with scissors, more or less in Burow's manner; and (2) that his graft is fixed by means of sutures at each end—a loop on the graft, the knot on the skin surface. These sutures I consider quite unnecessary, and possibly harmful.

Maher published another paper[10] on this operation in 1914, because he found that after the lapse of seventeen years it had still not won general recognition, and because he was convinced after hundreds of operations that it gave better results than any other operation.

I hope that Webster's operation, which I believe for reasons given to be better still, may win the recognition it deserves. I would most strongly urge young surgeons who may be going to trachomatous countries to begin their operative treatment of entropion by an operation which will never fail.

NOTE.—Since this article was written I have had the pleasure of submitting it to Dr. Webster who states that the method and technique I have described are almost identical with his own. He tells me he frequently does the operation under local anaesthesia (1 per cent. novocaine) though on the whole he prefers a general anaesthetic. He now leaves the eye unbandaged after the first twenty-four hours, merely keeping it protected by a flap of lint kept moistened with boric lotion. He has performed the operation more than 5,000 times and for many years past has not had a case in which the graft has failed to take. Occasionally he has found it necessary where his first graft has been too short or too narrow to insert a supplementary graft at a later date. These small grafts he always inserts under local anaesthesia.

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8. **Gifford.**—*Amer. Jl. of Ophthal.*, Vol. IX, p. 1, 1892. *Ophthalmoscope*, Vol. XII, p. 698, 1914.
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10. **Ibid.**—*Ophthalmoscope*, Vol. XII, p. 206, 1914.

# A CASE OF MYASTHENIA GRAVIS OPERATED ON FOR PTOSIS BY HESS'S METHOD

BY

DAVID HARDIE

ABERDEEN

(WITH PHOTOGRAPH AND ADDENDUM BY W. H. KIEP, BRADFORD)

MYASTHENIA gravis being a somewhat rare disease the following case which occurred in my practice seems to be worth recording. The most interesting point is the satisfactory result obtained by operation for ptosis, which was the most disabling symptom.

The patient was a man, aged 38 years, a compositor by trade. There was nothing significant in his past history or in his family history, nor had he had any previous trouble with his eyes, except that he had always been short-sighted. He had never worn glasses.

His present illness began in September, 1925, when he noticed that he was not seeing so well, and that when he was reading the words tended to run together.

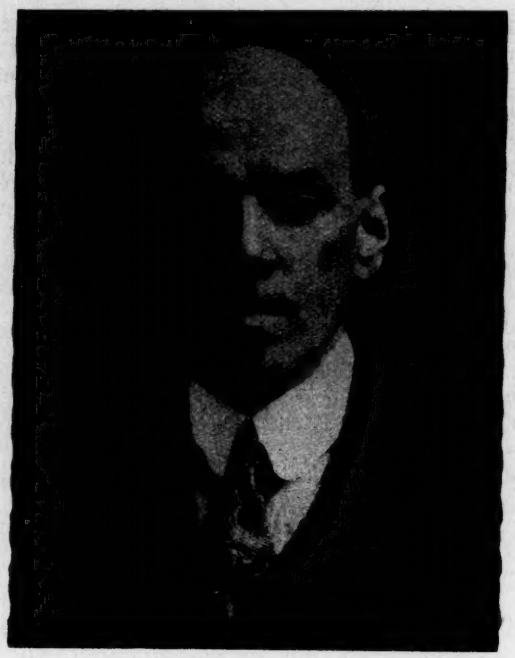
Early in October, 1925, he began to have some difficulty in keeping his eyes open in the afternoon, and occasionally he noticed that he was seeing double. Dr. Eurich saw him in consultation at this time and established the diagnosis of myasthenia gravis. The blood gave a negative reaction to the Wassermann test. Pluri-glandular treatment was tried, but the result was disappointing. The patient's condition grew gradually worse, until he could keep his eyes open only for a few minutes at a time, when, in spite of strong efforts to keep his eyes open, the lids would close down. After an interval of rest the eyes could be reopened, but, with repetition of the process, the period during which the eyes could be kept open grew shorter, whilst the interval of rest before they would reopen grew longer. Moreover, when the eyes were open diplopia was now always present, so that the patient was quite incapacitated from going about, or from reading, and he became very miserable and depressed.

The external muscles of the eyes and the levator palpebrae superioris on both sides seemed to be the only muscles affected. Both fundi were quite normal and vision in both eyes with −1.50D. sph. was normal.

It was, therefore, thought that, if a ptosis operation could be done, the patient's general condition would be improved, and Mr. Kiep, who saw him in April, 1926, agreed with this and suggested that Hess's operation would probably give the best result. At the same time, on account of the diplopia, he proposed

to operate on one side only, and this was done (*vide* Mr. Kiep's note and photograph).

The result has fulfilled our expectations, as the patient can now open and close the (left) operated eye at will. His general condition has greatly improved, and he is much less depressed. He can now go about by himself, and can read for half to three-quarters of an



hour without discomfort. He complains of a dragging sensation in the unoperated eye when he moves the open eye in any direction, and, if he holds the right eye open, the diplopia is at once manifest. He is very well satisfied, however, with the result of the operation; and seeing that up to the present the myasthenic condition does not appear to have affected the internal muscles of the eyes, nor to have spread to the muscles of the face, trunk, or limbs, operative treatment seems to have been justified.

The photograph which was taken by Mr. Kiep in January, 1927, shows very well the ptosis of the right eyelid, and the excellent position in which the left eyelid is now maintained without effort.

Aszalos records a somewhat similar case, but, as there was no diplopia, Hess's operation was performed on both sides with a satisfactory result.[1]

Peters describes a case in which he operated by Pagenstecher's method,[2] and Braunschweig operated on the brother of Peters' case.[3]

These are the only references to operation in cases of myasthenia gravis that we have been able to find and it would be interesting to know if there are many similar cases which perhaps have not been recorded.

It appears to be recognized that cases of myasthenia gravis do occur in which the symptoms either remain confined to the eye muscles[4] or spread to other parts of the body only after long intervals of months or even years[5]; so that it would seem worth while in all but very acute cases to consider operative treatment where ptosis is a prominent and disabling feature.

Addendum by Mr. W. H. KIEP.

Hess's operation was performed on left upper eyelid on May 6, 1926, the drooping of the lid being over-corrected. Patient made an uneventful recovery and when I saw him some six months later asked to have the other eye done. On account of the persistent diplopia, however, it was not considered wise to do the right side.

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5. **Taylor.**—*Trans. Ophthal. Soc. U.K.*, Vol. XXXVIII, p. 168, 1918.

## SERIOUS HAEMORRHAGE FROM THE CONJUNCTIVA IN AN INFANT, FOLLOWING INSTILLATION OF SILVER NITRATE SOLUTION

BY

J. G. F. HEAL, M.D., C.M., LONDON.

THE child was born at 10.30 a.m. on April 20, 1927. As the mother was believed to have gonorrhoea, the medical attendant ordered 1.5 per cent. solution of silver nitrate to be dropped into the infant's eyes three times a day.

The child was first seen by me thirty-four hours after birth. It was ascertained that the silver nitrate had been instilled into each eye on at least five occasions. The lids of both eyes were slightly swollen, and the margins hyperaemic. The right eye:

there was a slight sanguineous discharge from this eye, the conjunctiva of the lids was denuded of epithelium in places which showed as oozing areas; the cornea was steamy. The left eye: the conjunctival sac was filled with a firm blood clot, which extended behind both lids, covered the cornea, and protruded through the palpebral fissure. Blood was oozing from between the lids. At first a birth injury was suspected, as forceps had been used, but this was negatived by observing that the tension of the eye was normal, and that the condition of the right eye could not have been due to injury. The blood clot was not disturbed, and all interference with the eye was stopped.

Throughout the 22nd the left eye continued a slight oozing, the right eye did not bleed. A pressure bandage was ordered for the left eye.

During the 23rd the oozing of blood from the left eye became worse. The pressure bandage produced no effect, but became soaked with blood. The conjunctival surface of the lids in the right eye showed patches of yellowish adherent exudate, probably fibrin. The bleeding from this eye had permanently stopped. The child looked shrunken, it was getting weak, and refusing its food. There was every reason to believe that if the haemorrhage were not checked the child would die.

On the 23rd, at 8.30 p.m., the child was anaesthetized with chloroform. After removing a firm shrunken blood clot from the left conjunctival sac, the cornea was found steamy over its whole surface, and showed what appeared to be a loss of substance over a linear area concentric with, and just within the limbus, at its lower and outer quadrant. The upper lid showed an extensive raw area, oozing blood from a number of points. This area extended over the outer three-quarters of the conjunctival surface of the everted lid. The oozing was mostly in the region of the subtarsal furrow. The bleeding points were sealed by touching them with the blunt end of a probe heated in a spirit lamp. About ten applications of the probe were made. The exact points of haemorrhage were rendered more readily manifest by continually sluicing the surface with lotion from an undine. All bleeding was stopped, vaseline was inserted between the lids, and the eyes left uncovered. The right cornea was steamy, but rather less so than the left. The lower lids were comparatively little affected in either eye. No further bleeding occurred, and the child made a good recovery.

When seen five weeks later the corneae were perfectly clear except for a faint trace of opacity at the lower and peripheral part of the left. There was no entropion of the lid which had been cauterized, and both lids appeared to be quite normal. The child had developed fixation. There was no nystagmus.

In this case gonorrhoea could be negatived by the complete absence of any purulent discharge and the slight and transient nature of the conjunctivitis.

No history of haemophilia could be obtained from either parent, nor had they any knowledge of its occurrence in their respective families.

## ANNOTATIONS

### A Great Neurological Triad

The publication of Sherrington's lectures on "The Integrative Action of the Central Nervous System" in the year 1906 was one of the most important milestones on the road of neurological research. In that volume was codified, for the first time, all the researches which Sherrington and his pupils had been carrying on over a long series of years. The characteristics of the spinal reflex were defined and we were allowed to see, as in a glass darkly, something of the working of the central nervous system. It would be impossible within the limits of a short annotation to enumerate all the various lines of research which have been inspired by Sherrington's great work, but, for two reasons, the present would seem to be a suitable time to refer to two of the greatest branches which have grown from the tree which he then planted. The first can only be referred to with deep regret. The recent death of Professor Magnus of Utrecht has been a very grievous loss to physiology. One of the most brilliant of Sherrington's disciples, he was the inspiration of the Dutch school of neurological research, and his recent book "Körperstellung" does for the mid-brain region what Sherrington's work had already done for the spinal cord. It has established itself as one of the classics of neurology, worthy to take its place beside "The Integrative Action of the Central Nervous System."

The second of the great branches which has sprung from this common stem is Pavlov's work on "Conditioned Reflexes." What Sherrington did for the spinal cord and Magnus for the mid-brain, Pavlov has essayed to do for the cortex cerebri. Hitherto, in England, we have only known somewhat vaguely of the work done by the distinguished Petrograd physiologist on these lines. Most of the papers have been in a language not readily available to the ordinary Englishman. With the assistance of a grant from the Royal Society, Dr. Anrep has now published a translation of Pavlov's lectures in which are summarized the researches which he and his pupils have been carrying on for the

last twenty-five years. This book "Conditioned Reflexes" will be to many a revelation of a new country. After the loose talk and looser thinking which characterizes much of the so-called "psychology" of the present day, it is as refreshing as getting out into the fresh air after being in the fuggy miasma of a tropical jungle. Here we have no cloud-soaring superstructure of argument based on unverified and often incredible assumptions, but simple plain statements of measured actions and reactions, and deductions therefrom. If psychology is ever to become a science Pavlov has shown how it may come about. It is not easy reading; the country is new and the paths are not well-trodden, but Pavlov's book takes its place with those of Sherrington and Magnus in forming what we have called "a great neurological triad." The knowledge contained in these three great works will give the student of the future a sure foundation on which to build up a true science of psychology.

Though mainly neurological in their interest there is much of value to the ophthalmologist, especially in the work of Magnus on ocular reflexes controlled by the labyrinth and the conditioned reflexes of Pavlov resulting from visual stimuli.

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### Monograph Supplements and Books

This journal, as our readers are aware, has on three occasions distributed to its subscribers valuable monographs which it would have been impossible, on account of their size, to publish in an ordinary issue. These three: "Parenchymatous Keratitis," by Holmes Spicer; "Retinal Venous Thrombosis," by R. Foster Moore; "Biochemistry of the Aqueous humour," by W. S. Duke-Elder, have, we know, been much appreciated.

Early in the New Year the journal embarks on a new venture, the publication of "The Development of the Human Eye," by Miss Ida Mann. The printing and publishing will be in the hands of the Cambridge University Press. It is not our place to praise our own children before they see the light, but those of us who have had the privilege of seeing the manuscript are convinced of its value. Miss Mann has already shown her capacity for the work in several papers and exhibits. Further, there is no book in the English language in which the known facts of ocular development are specially dealt with. Bach and Seefelder (in German) appeared before the war and Versari's valuable contributions to the subject (in Italian) have never been collected into one volume from the various journals in which they appeared. The value of such a book is not confined to the theoretical questions involved, important as these should be to all ophthalmologists. The work has a very practical value in the

diagnosis of congenital defects likely to be met with in practice, always a subject of considerable difficulty.

All of us who have done any research work of a nature not of use in a student's text-book have been met with the difficulty of securing publication, particularly in the case where many illustrations are essential, and when the public addressed can only be a very limited one. It will be remembered that when the company which owns the *British Journal of Ophthalmology* was originally founded the main purpose was not the earning of dividends but the furthering of the best interests of British ophthalmology. There can be no question of the value of the publication of important works such as the one we are now proposing to issue. We trust that the support extended to this venture may be sufficient to encourage further efforts at a later date.

Reference to our advertisement columns will show that a considerable reduction in price is offered to those who subscribe before publication.

## THE INTERNATIONAL OPHTHALMOLOGICAL CONGRESS, 1929

THE Committee of Dutch Ophthalmological Surgeons who are organizing the Congress to be held at Amsterdam in September, 1929, have already made considerable progress in their arrangements and ophthalmologists may all expect to receive in the near future a preliminary notice and invitation. At the request of the National Committee, two of the non-Dutch officials of the International Council recently visited Leiden and spent two strenuous days in consultation with the President, Professor van der Hoeve, and the two secretaries, Dr. Marx, secretary of the International Council and Professor Zeeman, secretary of the National Committee. At these meetings the following provisional arrangements were made:

The Congress will open at Amsterdam on Thursday, September 5, 1929, in the afternoon, with a General Meeting and reception of delegates. The offices of the Congress will be open from 9 o'clock that morning for members to inscribe their names and receive their cards of invitation and dinner tickets, etc. In the evening there will be a reception by the Burgomaster of Amsterdam. The scientific meetings will take place twice daily on Friday, Saturday, Monday, and Tuesday, at Amsterdam, and on Thursday and Friday at Scheveningen. On Saturday evening the seventh, at Amsterdam, there will be a special concert, and Monday evening

a special cinema film illustrating Leeuwenhoek's life and work will be shown. On Sunday, the eighth, there will be excursions from Amsterdam. Wednesday, the eleventh, will also be devoted to excursions, but instead of returning to Amsterdam, members will go to Scheveningen where their luggage will be taken by special train, and, in the evening, the banquet will be held in the Casino at Scheveningen. On Thursday night there will be a Government reception at The Hague and on Friday the final scientific meetings and the general meeting of the Congress will be held.

The subjects for general discussion which have been chosen by the National Committee are:

(1) "The aetiology and medical treatment of glaucoma."
(2) "The geographical expansion of and the social international campaign against trachoma."
(3) "Diagnosis of suprasellar tumours."

It is hoped that the full list of openers for these discussions will be ready shortly, but, as some of the invitations have to go a considerable distance, all the replies have not yet been received.

Besides these arrangements, which apply more particularly to the Congress, much preliminary work has been done towards the constitution of the committees suggested by the International Council:

(1) On visual standards.
(2) On standards of vision for railway men, motor drivers, seamen, and airmen.
(3) On ophthalmological education.

Contributions amounting approximately to £1,000 have been received towards the funds of the International Council. We publish below a second list of contributors. The first list was published in our November number.

## Subscribers to International Ophthalmological Council Fund

### SECOND LIST

#### SOCIETIES, INSTITUTIONS, ETC.

American Ophthalmological Society.
Austrian Ophthalmological Society.
Belgian Ophthalmological Society.
Buffalo Ophthalmologic Club.
Ophthalmological Society of Oslo.
Royal Society of Medicine.
Sociedad Oftalmologica Hispano-Americana.
Société française d'Ophtalmologie.
Société d'Ophtalmologie de Paris.
Swiss Ophthalmological Society.
Union of Ophthalmologists in Finland
Central London Ophthalmic Hospital
Ophthalmic Clinical Hospital, Helsingfors.
Western Ophthalmic Hospital.
Netherlands Ophthalmological Society.
Scottish Ophthalmological Club.

INDIVIDUALS.

Batten, Rayner.
Beach, S. J.
Bedell, Arthur J.
Blair, Wm. W.
Blake, E. M.
Brawley, Frank.
Briggs, Wm. Ellery.
Brown, A. L.
Bruner, Wm. Evans.
Burch, Frank E.
Charles, J. W.
Colver, B. N.
Connor, Ray.
Coppez, Henri.
Craig, James A.
Crisp, W. H.
Davis, Wm. T.
Dean, F. W.
de Grósz, Emile.
de Sousa, Borges.
Dolman, Percival.
Dunnington, John H.
Fenton, Ralph A.
Fox, L. Webster.
Fuchs, Adalbert.
Fulkerson, C. B.
Garrow, A.
Gibb, H. P.
Gifford, S. R.
Greenwood, Allen.
Griscom, J. Milton.
Grönholm, V.
Hagen, S.
Hudson, A. C.
Imre, József.
Jack, Edwin E.
Killen, W. M.
Knapp, Arnold.
Krug, E. F.
Larkin, Bernard J.
Lewis, Park
Lindberg, Y.
Lloyd, Ralph I.
Malling, B.
Marshall, J. Cole.
Meyerhof, Max.
Millette, J. W.
Morax, V.
Muncaster, Dr.
Mundt, G. Hy.
O'Brien, C. S.
Patton, J. M.
Pike, N. H.
Rea, R. Lindsay.
Reese, Warren S.
Roberts, W. H.
Rolston, John R.
Santos, Costa.
Scott, Rupert.
Snyder, Walter H.
Suker, G. F.
Taylor, Lewis H.
Thompson, A. Hugh.
Viner, Geoffrey.
Weeks, Webb W.
Wells, David W.
Werner, Sigurd.
Wiener, Meyer.
Wilson, Edward F.
Woodruff, Hy. W.
Würdemann, H. V.

# ABSTRACTS

## I.—TUMOURS

(1) **Coppez, H., Simon, S., and Claes, E. (Brussels).—A case of metastatic neuroblastoma of the orbit. (Un cas de sympathicoblastome métastatique de l'Orbite.)** *Arch. d'Ophtal.*, April, 1927.

(1) This case occurring in a female child, aged 5½ years, is reported fully by **Coppez, Simon,** and **Claes,** from both the clinical and pathological aspect, and is illustrated by coloured drawings and micro-photographs of the structure of the primary and of the metastatic tumours; also by a photograph of the child's head during life.

The history covered a period of about seven months of ill-health and emaciation; for three months deformity of the head and protrusion of the eyeballs had been observed. On admission to hospital the following conditions were noted: profound cachexia; head greatly deformed by numerous soft painless tumours on the parietal, occipital, and frontal bones; considerable exophthalmos and lagophthalmos; some chemosis; papilloedema, more noticeable on the left side, probably of some weeks duration and showing signs of commencing atrophy of the nerve; enlargement of the praeauricular glands and glands of the neck; a very large

abdominal tumour. Lumbar puncture showed very high pressure in the cerebro-spinal fluid.

Death occurred the day after admission. A post-mortem examination revealed a large suprarenal tumour on the right side. Along the vertebral column were large ganglionic masses continuous with the renal growth. The liver extended nearly to the pubes and contained numerous metastatic nodules. On the surface of the skull there was a "multitude" of soft confluent growths, haemorrhagic in appearance, adhering to the bones. On the inner surface of the cranial vault was a complete layer of metastatic growth of uniform thickness (approximately 1 cm.) spread out between the bone and the dura mater and firmly adherent to the latter; it was continuous with the external tumours through the interosseous sutures. This layer extended into the orbits along the outer wall and roof without forming any adhesions to the globe, the optic nerve, or the cone of muscles. The base of the skull and the floor of the orbits were intact. The brain, though compressed, was not invaded by growth. The eyeballs were displaced forwards and downwards by the orbital tumours.

The histological characters which are well described and illustrated by the authors did not differ materially from those of previously described cases of neuroblastoma.

Although tumours of this type originating in the suprarenal tissues are not very uncommon (about thirty are on record) the authors state that they have found only three instances, in addition to their own case, of orbital metastasis. These were recorded by Quackenboss and Verhoeff, Wessely, and Seefelder.

J. B. LAWFORD.

(2) **Jackson, Edward (Denver).—Retinoblastoma and recent views of malignancy.** *Jl. of Amer. Med. Assoc.*, October, 1927.

(2) Retinoblastoma is the best name for the malignant disease which always originates in the retina, is often familial, is generally congenital, and becomes manifest in infancy, or, with rapidly diminishing frequency, in the early years of childhood.

**Jackson** refers to the literature on the condition, including the series of cases reported from the Royal London Ophthalmic Hospital, and those reported by Newton (*Australasian Med. Gaz.*, 1902), of a family of sixteen, of whom ten suffered from retinoblastoma. The definite clinical characteristics of retinoblastoma, its congenital origin and malignant course, give it the highest importance in the investigation of malignant tumours in man. They practically refute an extrinsic origin, a contagious character, for such growths, but they strongly support the view that malignant

disease arises by certain body cells that retain the power of responding to stimuli by increased growth and multiplication, acquiring the power to elaborate a substance—the essence of a "cancer juice"—that acts injuriously on other cells of the body, and so favours the extension of the disease.

A. F. MACCALLAN.

**(3) di Marzio, Professor Quirino (Rome).—Glioma of the retina and its treatment by X-rays. (Glioma retinico e sua cura coi raggi X.)** *Boll. d'Ocul.*, July-September, 1926.

(3) **Professor di Marzio** relates the cases in the literature of glioma retinae treated by X-rays, radium, and thorium, most of them with disappointing results. He then describes two cases observed by him. The first patient had received X-ray treatment before he was seen by the author. There were symptoms of extension of the tumour to the brain (epileptiform attacks). One eye was affected and this was excised. Examination of the excised eye showed the optic nerve to be invaded by tumour throughout.

The second case, a boy, aged 4 months, with bilateral glioma, was treated with surprisingly good results. The right eye contained a tumour which nearly filled the globe. In the left eye there was a tumour occupying about one-fifth of the vitreous chamber, extending from the equator, temporally, to the macular region. Six exposures to X-rays were made. After five months the right eye showed no tumour, clinically. The retina was completely detached and the eye was shrinking. In the left eye there was no trace of tumour, only a flat, greyish patch where the tumour was formerly seen. The child's vision was greatly improved and he could distinguish quite small objects, such as a needle and a white thread. The blind right eye was excised and microscopic examination showed no glioma cells in the eye and optic nerve. The X-rays caused no damage to the cornea. The author gives full details of the irradiations, and emphasizes the importance of correct dosage and technique.

ARTHUR GRIFFITH.

**(4) Kearney, James A. (New York City).—True filial teratoma and cyst in the orbit of new-born child.** *Amer. Jl. of Ophthal.*, June, 1926.

(4) **Kearney** describes an interesting example of this condition in an infant seen by him ten minutes after birth. The child was well formed except for the presence of a red mass extruding from the right orbit, looking like a ripe tomato, with the eye set in the middle of its anterior surface. The pupil was equal in size to that of the fellow eye and both reacted normally. The upper and lower

lids were everted by the tumour mass. The tumour was successfully removed and on examination proved to be a teratoma. It contained sweat glands, sebaceous glands, hair follicles, mammary acini, intestinal glands, cartilage, bone, fibrous tissue, plain muscles, and mucus. There was also a cyst lined by stratified epithelium. With regard to the technique of the operation, it was found necessary to make a temporary section of the internal rectus in order to gain access to the tumour without removing the eye or cutting the optic nerve. There was some corneal ulceration afterwards owing to the palpebral fissure being unduly wide. This was overcome by performing a tarsorraphy; there was also a temporary rise of intra-ocular tension, which yielded to a posterior sclerotomy. When last seen, at the age of 7 months, the child appeared to notice bright objects with the affected eye, and a red fundus reflex was obtained with the ophthalmoscope, though details could not be made out. The paper closes with a summary of other reported cases of teratoma of the orbit, the references to which are appended:

**Holmes.**—*Trans. Path. Soc., Lond.*, Vol. XIV, p. 248, 1863.
**Broer and Weigert.**—*Virch. Arch.*, Vol. LXVII, p. 518, 1876.
**Ahlfeld**—"Die Missbildungen d. Menschen," 1, Abschnitt, Leipzig, Taf. VI, Fig. 11, p. 52, 1880.
**Lawson.**—*Trans. Path. Soc. Lond.*, Vol. XXXV, p. 379, 1884.
**Courant.**—*Centralbl. f. Gynäkologie*, Vol. XVII, p. 740, 1893.
**Ewetzky.**—*Moscow Ophthal. Soc.*, Vol. XXI, p. 690, 1904; *Nagel's Jahresbericht*, p. 303, 1904.
**von Hippel.**—*Arch. f. Ophthal.*, Vol. LXIII, p. 1, 1906.
**Mizuo.**—*Ber. u. d. 35st Versamml. d. Ophthal. Gessellsch.*, z. *Heidelberg*, p. 347, 1908.
**Lagrange.**—*Arch. d'Ophtal.*, Vol. IV, p. 536, 1895.
**van Duyse and Talko.**—*Encyclop. franç. d'Ophtal.*, Vol. XI, pp. 558 and 560, 1905.
**Vanzetti.**—*Ann. di Ottal.*, Vol. XXX, p. 33, 1901.
**Kruckmann.**—*Arch. f. Ophthal.*, Vol. XLVII, Pt. i, p. 150, 1898.
**Waele and Lewuillon.**—*Encyclop. franç d'Ophtal.*, Vol. XI, p. 561, 1905.
**Borst.**—*Ziegler's Beiträge*, Vol. XXXI, p. 419, 1902.
**Hennig**—*Ziegler's Beiträge*, Vol. XXVIII, p. 593, 1900.
**Wagenmann.**—*Arch. f. Ophthal.*, Vol. XXXV, Part iii, p. 111, 1889.
**Krukow.**—*Arch. f. Ophthal.*, Vol. XXI, Part ii, p. 226, 1875.
**Rothschild.**—*Deutsche. med. Wochenschr.*, p. 2048, 1907.
**Verhoeff.**—*Trans. Amer. Ophthal. Soc.*, Vol. X, Part ii, p. 351, 1904.
**Alling.**—*Trans. Amer. Ophthal. Soc.*, Vol. X, Part ii, p. 265, 1904.
**Coulter and Coats.**—Roy. *Lond. Ophthal. Hosp. Reps.*, January, 1910.
**Elliot and Ingraham.**—*Ophthalmoscope, December, 1910.*
**Mizuo.**—*Arch. f. Augenheilk.*, Vol. LXV.

F. A. WILLIAMSON-NOBLE.

(5) **Langdon, A. Maxwell, M.D. (Philadelphia).—A case of hemangiomatous endothelioma.** *Trans. Amer. Ophthal. Soc.*, Vol. XXIV, 1926.

(5) The case reported by **Langdon** was that of a man, aged *63 years*, who gave a history of occasional bleeding from the right eye, extending over a period of three months. On examination

the author found, on the inner surface of the lower lid of the eye in question, an irregular papillomatous mass about 5 mm. in diameter, attached to the conjunctiva by a broad base. The growth was excised; the haemorrhage being profuse, but easily controlled by pressure. The wound healed by first intention.

The illustration shows the microscopic appearance of the growth as seen by the low and high power. The specimen was surrounded by a layer of squamous epithelial cells, which showed no tendency to break through the basement membrane. The general structure was that of a haemangioma, with numerous irregular blood-spaces of varying size, with a considerable amount of tissue between them; the predominating cell in this tissue had a rather large irregular nucleus. The growth was diagnosed pathologically as a haemangiomatous endothelioma.

The author gives a short bibliography, quoting Pergen's article in the *Klin. Monatsbl. f. Augenheilk.* for 1901, at which time 52 growths of a similar nature had been recorded in the literature. Subsequently cases have been reported by Gifford, Castellain, Adams, of Oxford, and by Mayou. In view of the fact that Langdon considers that no such cases have been reported since Mayou's case in 1913, it may be worth while to inform him that two similar cases were recorded in our pages by the reviewer and the late R. Salusbury Trevor, Vol. 2, p. 129; while a letter recording another case was published in this journal by George Maxted of Norwich, Vol. III, p. 429.

R.R.J.

(6) **Terrien, F. (Paris).—Latent intraocular tumours. Juxta-papillary leuco-sarcoma with irido-cyclitis.** (**Tumeurs latentes du globe oculaire. Leuco-sarcome juxta-papillaire avec irido-cyclite.**) *Arch. d'Ophtal.*, July, 1926.

(6) Numerous instances have occurred, especially in aged persons, in which the diagnosis of intraocular tumour has been made only after removal of the globe. **Terrien** thinks that every ophthalmic surgeon of experience has met with such cases. He is cognisant of eleven examples, of which six occurred in his own practice and five in that of a colleague. In all, the history was very similar: the subject was old, often over 70; the sight of one eye had failed gradually and when advice was sought the eye had become glaucomatous and no examination of the deep structures was possible. Enucleation and examination of the globe revealed the existence of sarcoma of the choroid, usually of the fusiform celled variety. In some recent statistics from Moorfields Hospital, published by Neame and Ali Khan (*Brit. Jl. of Ophthal.*, p. 618, 1925), and extending over a period of eleven years, the number of

eyes removed for absolute glaucoma was 402: in 16 of this number the existence of new growth was not suspected before operation. More recently Cazalis (*Arch. d'Ophtal.*, p. 83, 1926) has reported two observations of such cases of unusual interest, in that in both instances recurrence of the sarcoma occurred in the orbit after intervals of eight and nine years respectively.

Another group of cases much less common concerns the development of a choroidal tumour in shrunken eyes; in such instances the only symptom likely to excite suspicion of new growth is the advent of pain. Terrien has previously recorded two examples. The case reported in the present paper is that of a man, aged 56 years, whose right eye became blind from severe irido-cyclitis eighteen months before he came under observation. The globe showed a slight degree of shrinking, was quite blind, intermittently painful and very tender on palpation. On removal and section a large leuco-sarcoma was found at the posterior pole; the anterior part of the globe exhibited the results of severe inflammatory lesions involving the iris and ciliary body. These are well shown in a micro-photograph.

J. B. LAWFORD.

(7) **Teulières, M. (Bordeaux).—Early symptoms of tumour of the choroid. (Symptomes précoces des tumeurs de la choroïde.)** *Arch. d'Ophtal.*, July, 1926.

(7) After some preliminary remarks on the importance of early diagnosis and therefore of early treatment of intraocular tumours, **Teulières** proceeds: In cases of choroidal sarcoma, especially in those which originate behind the equator of the globe we have but few opportunities of recognizing the earliest signs of the sarcomatous invasion. Moreover, such indications as there are lack precision and occur also in other affections.

He directs attention to certain ill-defined visual disturbances without appreciable ophthalmoscopic changes, which cause patients to seek advice. No sign of disease is discovered by an ordinary examination, but after the lapse of some weeks or more the patient returns with detachment of the retina and perhaps hypertonus. In such instances the suspicion of sarcoma does not arise at the first visit, but possibly a more complete examination, *e.g.*, by Gullstrand's lamp and binocular ophthalmoscope would reveal changes which would arouse suspicion.

The author gives clinical notes of five cases in support of his contention. Recapitulating their symptoms during the initial period of the choroidal tumours there were objective scotomata, with colour sensations (yellow or violet), transient dimness of vision, phosphenes, and metamorphopsia. On examination were found, fugitive retinal oedema, divergent strabismus with diplopia, slight

increase of tension of varying duration, and progressive development of hypermetropia; in one case this last symptom was very noticeable. All these symptoms are likely to occur with greater frequency in cases of tumour arising near the macula.

The symptom which in the writer's opinion is of special value is progressive hypermetropia with diminution of visual acuity but retention of central fixation. In one of his five cases the hypermetropia rose from 1.25D. with normal acuity, to 4D. with vision 0.5. This he thinks is proof that the retina while retaining its function was pushed forward by the new growth.

J. B. LAWFORD.

(8) **Cazalis, C. A. (Béziers).—Unrecognized intraocular cancer. Preventive radium therapy of the orbit. (Cancers intra-oculaires méconnus. Radiothérapie orbitaire préventive.)** *Arch. d'Ophtal,* February, 1926.

(8) **Cazalis** reports two cases in which a blind glaucomatous eye was removed for the relief of pain; in both patients a malignant growth developed in the orbit from which the eye had been excised, after an interval of some years, and, despite active surgical measures and the use of radium, led to a fatal termination. The burden of Cazalis' paper is to urge the exercise of greater care in the diagnosis in such cases: to suspect the existence of a malignant growth in all eyes blind from absolute glaucoma and to determine this in every case immediately after the eye has been excised. It is this neglect to examine the excised eyeball which has been followed by such serious results. In all cases in which an eye containing a malignant growth is excised, immediate and continued treatment of the orbital contents by radium is, in the author's opinion, an essential procedure.

J. B. LAWFORD.

(9) **Cange, A., and Duboucher, H. (Algiers).—Melanotic sarcoma of the limbus; secondary generalised sarcomatosis of skin. (Sarcome mélanique du limbe et sarcomatose cutanée généralisée secondaire.)** *Arch. d'Ophtal,* November, 1926.

(9) **Cange** and **Duboucher** report and discuss at great length, a case which is worthy of record by reason of its rarity. They have found only one other report in the literature they have searched in which widespread sarcoma of skin followed a primary epibulbar growth. That example was reported by de Wecker and resembled the case now published in many of its features.

Cange's patient was a healthy male, aged 41 years, who came under observation in March, 1918. A rounded tumour filled the

outer half of the right palpebral fissure. It was widely attached at the limbus, overlapping the sclera by two-thirds and the cornea by one-third of its extent. In form and volume it resembled a large almond with its long diameter horizontal. Its surface was smooth, its general colour greyish with zones of deeper tint and showing fine vascular networks. Towards the temporal margin was a large black patch.

Two months later the tumour was removed without difficulty, a conjunctival flap being brought over the denuded portion of the sclera. Exactly two years later a recurrence the size of a green pea was removed from the same position and the site covered by a conjunctival flap. At this time a small nodule was found in the skin of the temporal region and three others in the malar and frontal areas. Further examination then revealed the existence of numerous small rounded tumours in the skin of almost every part. Only the hands and feet and the hairy parts of the body were free. The man's general health had not suffered and there were no signs of visceral involvement. The patient was seen at intervals until August, 1921, approximately three and a half years after his first appearance. At this latter date he complained of feebleness, anorexia, and frequent attacks of vertigo: there was no papilloedema. The cutaneous tumours were rather larger and more numerous. Shortly after this the man was found dead in a roadside ditch. No post-mortem examination was obtained.

Histological examination was made of the primary tumour at the limbus; a cutaneous nodule in an early stage of development; another nodule in complete development; and one undergoing retrogression. In all, the sarcomatous nature of the growths was confirmed by the microscope.

J. B. LAWFORD.

(10) (1) **Gérard, G. and Morel, J. (Lille)**; (2) **Gérard, G. and Detroy, L. (Lille).—Two cases of glioma observed in later childhood and in an adult. (Deux cas de gliome observés dans la seconde enfance et dans l'age adulte.)** *La Clin. Ophtal.*, June, 1926.

(10) The first of these articles by **Gérard** and **Morel** deals with the case of a boy, aged 11 years, the second with a woman whose age is stated differently in two parts of the article as 50 years and as 66 years. It is pointed out by **Gérard** and **Detroy** that glioma in a person so old as eleven years is not an every-day occurrence, since it has been stated by Lagrange to be unknown after twelve years. With regard to the second case the authors say that they had known of no exception to the rule until "the luck of the clinic" produced a tumour, proved to be retinal glioma by histological

examination made by Professor Curtis, in an elderly woman. The facts are interesting and likely to form precedents, but no good purpose would be served by endeavouring to abstract the details of the case histories and the pathological examinations of the eyes.

ERNEST THOMSON.

## II.—DISEASE OF CORNEA

(1) **Jeandelize and Bretagne (Nancy).—A case of hereditary and familial keratitis examined with the ophthalmic microscope. (Un cas de kératite héréditaire et familiale vu en microscopie oculaire.)** *Ann. d'Ocul.*, Vol. CLXIII, p. 608, 1926.

(1) **Jeandelize** and **Bretagne** record in very great detail their examination of a case of familial keratitis (*kératite grillagée*). Various tests and special examinations concerning the functions of different organs were also carried out. The patient was a man, aged 49 years. His sight began to fail at about the age of 30 to 35 years. The corneae were of grey milky colour throughout except near the limbus. The hazy area contained a grating formation with small clearer spaces between the lines in the central part of the cornea and larger spaces peripherally. The corneal microscope and slit-lamp revealed the corneal nerves as unusually well-defined in one of the clearer parts of the periphery. The nerves were the site of whitish thickenings at certain points. In the more affected regions the milky appearance was found to be due to innumerable tiny white spots, comparable with the flakes of falling snow. In this area were long white ramifying filaments like branches of a tree covered with snow—in all probability degenerated corneal nerves. In the less affected areas the disturbance involved chiefly the middle depth of the substantia propria. In the more opaque parts the anterior layers were also implicated, but not the epithelium. The more opaque central area was avascular. A few vessels were present in the peripheral parts. The sensitivity of the cornea alone was reduced. There was a slight horizontal nystagmus. No view of the fundus was obtainable in either eye. The visual acuity was 1/100 in each. Investigations were carried out on the various organs and their functions, including the circulatory, pulmonary, and digestive systems, the liver and the spleen. Of a number of tests made the only abnormalities were slight muscular hyperexcitability, slight acidosis, slightly raised blood urea, hypercholesteraemia, and excess of blood calcium. The family history exposed defects of vision on the maternal side. A brother had, from the history, a

condition somewhat analagous; a sister was examined by the authors and found to have an exactly simliar condition of the cornea with hypo-aesthesia; one of the patient's two children had a similar grating-like opacity of the corneae but less marked in degree, with normal corneal sensitivity. It is suggested that the affection is the result of a neuritis of the corneal nerves of unknown hereditary and familial cause.

HUMPHREY NEAME.

(2) **Maillard (Tübingen).—A case of degenerative corneal changes in the cataract of myotonia. (Eine Fall von degenerativer Hornhautveränderung bei Myotoniekatarakt.)** *Klin. Monatsbl. f. Augenheilk.*, Bd. 77, S. 647, 1926.

(2) The cataract which appears usually in the third decade in the subjects of myotonia atrophica is well known; **Maillard** describes a further complication in a degenerative change in the cornea occurring in this disease.

The patient, who was aged 45 years, and was a typical case of myotonia, had bilateral cataract, and in the cornea there was a marked arcus senilis with a definite opacity inferiorly. Five weeks after extraction the right eye showed a loss of the corneal epithelium over the palpebral fissure and over the lower part of the cornea. At the same time the vision, which seventeen days after operation had been 5/8, fell to 5/24; and in spite of treatment by dionine and heat, it remained at about this level. Three months later the condition was unchanged.

W. S. DUKE-ELDER.

(3) **Dufour, M. (Nancy).—The use of heat in the treatment of erosion and ulceration of the cornea. (Emploi de la chaleur dans le traitement des érosions et des ulcérations de la cornée.)** *Ann. d'Ocul.*, Vol. CLXIII, p. 128, 1926.

(3) The most ancient method of applying heat to the eye is by compresses or fomentations. The objection to these is the ease with which they may carry fresh infection. Further, they become cool very rapidly so that frequent application is necessary. A hot-water bottle of capacity of 250 cubic centimetres gives more lasting heat. To obtain an absolutely constant temperature a rubber bag filled with a hot saturated solution of sodium acetate may be used. From the moment when crystallization starts the temperature remains steady. More convenient is the electric hot-pad in which an electric current is passed through a resistance or a transformer into a small coil of fine wire arranged between sheets of mica and covered with cloth. The temperature can be regulated by a rheostat. Less costly is the employment of a small electric lamp, of 10 to 20 candle power, arranged inside a small white metal

box which is covered with clean linen. This is heated by the main current, and is constructed with a convenient switch to enable the patient to turn the current on or off at will. For severe or chronic ulceration of the cornea, the direct application of the galvano-cautery has long been used. This method of treatment leaves a densely opaque scar. More satisfactory is the use of the cautery in close proximity to the ulcer without actual application to the cornea. The galvano-cautery at a dull red heat is held within three to five millimetres of the surface and margin of the ulcer. This procedure has an obvious drying effect upon the ulcer, and is believed to destroy micro-organisms without serious injury to the corneal tissue. In spite of the use of cocaine the application of heat in this manner becomes painful within about half a minute. After a short interval the treatment may be repeated once or twice for further periods of half a minute. In severe cases the cautery may be used in this manner as much as three or four times a day. The resulting scar is less opaque than that which results from touching the ulcer with the cautery. Provided the cautery is never used for direct application to the eye, the platinum points when worn out can be replaced by nickel-iron or nickel-steel which are much less expensive than platinum. Six cases of corneal ulceration are reported, in which the cautery was used in the manner described. Four of the cases were patients of twenty-seven years of age or less.

HUMPHREY NEAME.

(4) **Doyne, P. G. (London).—The treatment of corneal ulceration.** *Lancet*, July 16, 1927.

(4) To discuss satisfactorily such a large subject as ulceration of the cornea within the compass of two columns of the *Lancet* must indeed be a difficult task. In this, the 232nd of the series of special articles on treatment published by the *Lancet*, **Doyne** has set forth, it would not be right to say *discussed* because dogmatic statement is unavoidable in such articles, all the chief requirements in the treatment of corneal ulceration. It is an excellent piece of work and should be of the greatest value to the general practitioner and by no means to be overlooked as a useful synopsis by the specialist.

ERNEST THOMSON.

(5) **Hoffmann, W. (Königsberg).—Observations on the action of radiating the cornea with ultra-violet light, especially in ulcus serpens. (Weiter Mitteilungen zur Ultraviolett-bestrahlung der Hornhaut, besonders des Ulcus serpens.)** *Klin. Monatsbl. f. Augenheilk.*, Bd. LXXVIII, S. 487, 1927.

(5) Carrying out the technique and continuing the practice of Birch-Hirschfeld **Hoffmann** gives the results of the treatment of

190 cases of ulcus serpens treated by the direct local radiation of the cornea with ultra-violet light. The 190 cases are divided into three classes depending on their severity:

(*a*) Sixty-five mild cases in which the ulcer was small and accompanied by a visible hypopyon, and the vision was reduced to the counting of fingers at three metres or more. All of these healed well with the formation of a smooth scar, and with the retention of an amount of vision varying with the site of the ulcer.

(*b*) Sixty-three cases of medium severity in which the ulcer was large, and the hypopyon occupied from one-quarter to one-third of the anterior chamber, and in which all measurable visual acuity was lost. In all of these the ulcer was cured, without interference except the raying, the application of atropine, and heat.

(*c*) Sixty-two very severe cases with an extensive hypopyon. Most of them had other complicating diseases, some of them had been subjected to Saemisch section or cauterization, which did not stay their progress. By intensive ultra-violet treatment the ulcer was in the great majority checked and healing was brought on, only nine eyes out of the sixty-two being lost. These eyes which had to be excised are described as all being *in extremis* before they arrived at the clinic and were subjected to treatment.

Showing as it does failures in only 4.6 per cent. of cases of hypopyon ulcer, the treatment of this condition by local radiation with ultra-violet light as practised at the clinic at Tübingen, appears to give very satisfactory results.

W. S. DUKE-ELDER.

## III.—MISCELLANEOUS

(1) **Hemmes, G. D. (Holland).—The genesis of hereditary nystagmus. (Über die Genese des hereditären Nystagmus.)** *Zeitschr. f. Augenheilk.*, Bd. LVIII, SS. 413-419, April, 1926.

(1) **Hemmes,** continuing his observations on the genesis of hereditary nystagmus, concludes that all the cases he has examined fulfil the requirements of the following theory.

The patients affected with this anomaly of muscular action on looking to the side exhibit a jerky nystagmoid movement composed of two distinct components, a rapid movement and a slow one, the rapid phase towards the observed object, the slow phase towards the median plane: the first is the purposive action to attain fixation of the object looked at, the second is pathological. Between the two zones on either side where the jerky and unequal movement obtains, in most patients there is a zone in the centre in

which a pendular and equal movement is present. The centre of this zone is usually the midline, but sometimes it lies to one or other side. A rotatory movement is rarer; and the two elements, lateral movement and rotation may be combined.

Under physiological conditions, stimuli arising from the semicircular canals exert a regulating influence on the ocular muscles: the maculae of the saccules preside over the tone of the oblique muscles, those of the utricles are connected with the superior and inferior recti, while the tone of the external and internal recti are independent of vestibular control. In patients with hereditary nystagmus, there is no change in the orientation of the eye when the head is put in those positions wherein the receptor mechanisms of the vestibular apparatus should be stimulated maximally; it is to be concluded, therefore, that the efficiency of the semicircular canals is reduced or their function abolished. The obliques and the superior and inferior recti are thus deprived of a stimulus necessary for the maintenance of their normal tonicity, while the external and internal recti remain unaffected; the tone of the first group is therefore lessened, and that of the second is unchanged. When the eyes are moved from the primary position along the horizontal plane there is no single position in which the two horizontal recti are alone contracted; the obliques and the superior and inferior recti also take part in the synergic action, and these accessory adductors and abductors are constantly inter-changing, the state of activity of each one of them in any position of the eye depending on the size of the angle of deviation. The internal and external recti are in this way always supported by at least four of the other muscles. When, therefore, the eye is moved quickly out to attain fixation, the slow movement back is an attempt to maintain the physiological proportion in the amount of tone exerted by the co-ordinating muscles considered as a physiological whole: when the state of tension of one group is weakened and that of the other is not, the tendency is for the whole to adjust itself to a modified base line whereon the relative state of tonicity in both muscle groups would be the same as obtains physiologically for that position of the eye. Thus, if three acting abductors had a relative tonicity of 100 : 10 : 6, and the tone of two of them was reduced pathologically by half to 5 and 3, the available tone of the rectus would tend to become 50 in order to maintain the proportionate distribution of effort—50 : 5 : 3.

When the tone of the eight muscles which are thus susceptible to weakening is not reduced to the same extent, a purely horizontal nystagmus does not result. If the reduction in tone is present only in small degree, the difference in proportionate tonicity will produce appreciable effects only in maximum adduction and abduction, when the weakened obliques and superior and inferior recti co-

operate to the greatest extent in the movements around the vertical axis: under these conditions fixation may be perfect when looking straight ahead, and nystagmus appear on looking to the side. The fact that the middle of the zone of pendular nystagmus is sometimes to one or other side of the midline is probably due to individual variations in the insertions of the ocular muscles.

Ref. the parts taken by the various ocular muscles in the movements of the eyes:
**J. van der Hoeve.**—Ueber Augenmuskelwirkung und Schielen. *Klin. Monatsbl. f. Augenheilk.*, S. 62, 1922.

Ref. the influence of the semicircular canals on the muscles of the eye:
**F. H. Quix.**—De Functie der Otolithen. *Nederlandsche Tijdschr. v. Geneesk.*, Bd. I, S. 2670, 1921.

W. S. DUKE-ELDER.

(2) **Benoit (Liège).—Intermittent exophthalmos of nasal origin. (Exophtalmie intermittente d'origine nasale.)** *Bull. de la Soc. belge. d'Ophtal.*, November 29, 1925.

(2) **Benoit** records in this paper an unusual case of exophthalmos. The patient, a man, aged 35 years, was first seen by Benoit in October, 1924. He gave a history of a severe attack of influenza, four years previously, accompanied by right-sided headache, and nasal obstruction. Since then, on several occasions, he had had a feeling as though his right eye was protruding, and that, especially on leaning forward, his sight was defective on that side. These attacks only lasted an hour or two, they were not accompanied by any subjective nasal symptoms. The author saw him twenty-four hours after the commencement of the fourth of these attacks, an attack considerably more severe, according to the patient, than the previous ones. The notes recorded an immobile, divergent and proptosed right eye. There was no perception of light. The disc margin was blurred, and the retinal veins congested. The patient complained of severe headache, feverishness, and nausea. An examination of the anterior nares revealed no abnormality. A structure in the region of the maxillary antrum was explored by transillumination. Lavage of the antrum dislodged a plug of muco-pus. Two days later, owing to the persistence of fever, and despite a negative X-ray picture, a portion of the right middle turbinate was removed. Within a week, the proptosis had lessened, there was some return of vision in the temporal and upper nasal fields, and pus was now draining into the nose. A radical clearance of the ethmoidal cells was now performed. Within two days the vision had improved to 6/10, ocular movements had become almost normal, the disc appeared pale but had lost its fuzzy outline, and the exophthalmos had almost disappeared. This last, however, readily returned when the patient lay on his right side or hung his head. During the next few months there were several relapses of the ethmoidal

trouble. The exophthalmos was observed to increase regularly or decrease in inverse ratio to the nasal discharge. At the end of six months the nasal condition was cured. The exophthalmos had disappeared, nor did a change in the position of the head any longer cause its reappearance. The vision had improved to 5/10, and the field had expanded to almost normal limits in its upper half. The field had apparently permanently disappeared below a horizontal line running roughly 10° below the fixation level.

The author, in commenting on the case, attributes the exophthalmos to a varicocele at the apex of the orbit, the venous constriction being due to the spreading of osteo-periostitis from the affected posterior ethmoidal cells.

E. MAXWELL.

(3) **Rolleston, Sir H., Armstrong-Jones, Sir R., and Professor Dixon. The effects of tobacco.** *The Practitioner*, January, 1927.

(3) Here are three interesting articles by **Sir Humphry Rolleston, Sir R. Armstrong-Jones, and Professor Dixon.** Tobacco amblyopia, which is seen among the male out-patients of London hospitals, especially among men with foul teeth, is not a feature particularly described, but Professor Dixon's remarks on the physiological effects of smoking are important.

The only substances in the tobacco smoke which are known to exert any definite action are the irritants pyridine and ammonia, the gas, carbon monoxide, and the alkaloid nicotine. Pyridine and ammonia cause irritation of the mucous membranes, and give no pleasure. Pyridine and its derivatives have a very low toxicity, but they are said to stimulate the bone marrow to increase the production of blood platelets. Tobacco smoke diluted with air as it reaches the mouth of the smoker may contain as much as 25 parts of carbon monoxide in 10,000 parts of air. If this is inhaled, say for one hour, it should be enough to affect appreciably the blood, as the affinity of carbon monoxide for blood is more than 200 times that of oxygen. Estimations on these lines suggest that if a man smoked continuously for one hour, inhaling once in twelve seconds, the carbon monoxide might reach 20 per cent., and this amount in average people is enough to produce definite symptoms. Observations which have been made on the blood of cigarette smokers do not suggest that the amount is likely to exceed 10 per cent., and generally would be much lower. It has been shown experimentally that animals can acquire a form of tolerance to carbon monoxide. Supposing that an animal is kept in an atmosphere which places 10 or 20 per cent. of its haemoglobin out of action by combination with carbon monoxide, the number of red cells and haemoglobin gradually become increased until

the deficiency is made up. If now the animal is removed to ordinary air its haemoglobin soon registers 110 to 120 per cent., and it may suffer some discomfort. It is possible that the desire of the cigarette smoker may not be unconnected with this.

Nicotine is far more poisonous than carbon monoxide, since the nicotine present in a single cigar is able to cause death if injected into the circulation of a man. The characteristic action of nicotine is its stimulant effect on all nerve cells, not only of those of the central nervous system, but on the autonomic system also; this effect is followed by depression of the cells, insignificant if the dose of nicotine has been small, but marked after large doses. It causes, therefore, a feeling of well-being and exhilaration like caffeine drinks, but these effects last only while the smoking continues. The nicotine, in smoke which escapes destruction, finds its way into the mouth and is absorbed so rapidly that its effects are almost as rapid as the effects of inhalation of chloroform. A soothing effect follows cessation of smoking, depending on the depression of nerve cells, and in this respect is unlike the effect of tea or coffee. All the nicotine which reaches the mouth of the smoker is absorbed, whether he inhales or not.

Nicotine exerts a relatively greater depressant action on the sympathetic system (inhibitory) than on the vagus (augmentor). So that the first effect of smoking may be to augment the movements of the alimentary canal. Hence the value of the after breakfast smoke, depreciated in the case of the ophthalmic surgeon by an accompanying tremor.

Professor Dixon sums up by saying that the inveterate cigarette inhaler feels the need of carbon monoxide. He wakes in the morning supersensitive and irritable; having exhaled the gas in the night, his blood contains more than the usual requirements of active haemoglobin. The inveterate cigar smoker requires to be continually absorbing a small quantity of nicotine with which to keep up the artificial control he has established over his nervous centres.

A. F. MACCALLAN.

(4) **Benedict, William L., von Lackum, William H., and Nickel, Allen A. C. (Rochester, Minnesota).—The pelvic organs as foci of infection in inflammatory diseases of the eye.** *Arch. of Ophthal.*, March, 1927.

(4) This interesting article by **Benedict, von Lackum** and **Nickel,** emphasizes the need for a thorough and careful general examination in cases of ocular lesions, due to focal infection. The type of infection is nearly always one which shows little or no external evidence of disease, since infections which become more active and cause destruction of tissue with abscess formation bring

about a systemic reaction with liberation of anti-bodies, and resulting protection of the eye. The authors in this paper limit their investigations to infections of the uterus and prostate. Particularly instructive are cases of scleritis and sclerosing keratitis occurring in women. In many cases the exacerbations are periodic, beginning a day or two before menstruation and lasting for two to five days; ceasing entirely during pregnancy and lactation and recurring when menstruation again begins. Two such cases are mentioned in the text. In both, a haemolysing streptococcus was grown from the secretion round the cervix and complete recovery followed local treatment and administration of an autogenous vaccine. Prostatic infections are often difficult to diagnose, thus in 25 per cent. of cases, the prostate was normal on digital examination and in 33 per cent. the urine was normal. Microscopic examination of the secretion for clumps of pus cells or degenerated leucocytes is therefore necessary. The secretion may be difficult to obtain and it is frequently necessary to resort to provocative treatment—massage of the prostate, wide posterior urethral dilatations, and repeated injections of silver nitrate. When a bacteriological examination is to be made, the bladder should be irrigated and the glans cleansed before the secretion is expressed into a test tube of 1 per cent. gelatine in Locke's solution. Organisms both from the cervix and prostate are difficult to cultivate and at least three media should be used, blood-agar plates, glucose-brain broth, and soft glucose-brain agar, the latter two being partially anaerobic and furnishing a gradient of oxygen tension. The organisms found were a haemolysing streptococcus, a green-producing streptococcus and in a few cases, a Gram positive bacillus, 44 per cent. of cultures were sterile on blood agar but grew in glucose-brain agar and broth. Some interesting experiments bearing on "tabulation" were done with rabbits, using cultures less than 18 hours old. It was found that four out of six strains from the cervix and 10 out of 18 strains from the prostate from patients with lesions of the eye produced macroscopic lesions of the eye when injected intravenously into rabbits. In a control series of experiments, 335 strains from teeth, tonsils, prostate or cervix of patients having lesions other than those of the eye, were injected into 798 animals and less than 1 per cent. developed lesions of the eye.

F. A. WILLIAMSON-NOBLE.

(5) **Gérard, Georges (Lille).—The prognosis of chemical burns of the eye; more especially burns by baryta. (Du prognostic des brûlures chimiques de l'oeil; plus spécialement de ses brûlures par la baryte.)** *La Clin. Ophtal.*, May, 1926.

(5) This is a long article of nearly a score of pages built around the discovery that three cases of burn of the eye by barium turned

out very much less serious than had been expected from the early appearances. **Gérard** first discusses burns of the eye in general, then chemical burns of the eye by lime, caustic soda, nitrate of silver, strong acids, and ammonia. Next comes a description of the industrial use of barium in the refining of sugar, the different forms of barium employed in or resulting from the processes, the manner in which oxide or sulphate of barium reaches the eye, *i.e.*, in the form of fluid oxide of barium (milk of baryta) or solid dust of the oxide and, lastly, in the form of sulphide of barium. Then follows the detailed description of the three clinical cases. Although the immediate effect of a barium burn on the cornea and conjunctiva is very severe and would be likely to lead, as it did in the first case seen by the author, to a very grave prognosis, the ultimate result may be practically complete recovery, which indeed happened in the author's cases.

ERNEST THOMSON.

(6) **Rodiet, A.—The eye in insanity.** (**Les yeux des aliénés.**) *Gazette des Hôpitaux*, September, 1925.

(6) **Rodiet** starts with a plea for fuller recognition of the diagnostic importance of the expression in the eyes of the general paralytic, the epileptic, the melancholic, etc. Each has its characteristics to the trained eye that will practise the search for such characteristics. Conversely, the man who feigns insanity will most assuredly fail in the battle of wits with the expert alienist as much because of his expression and glance as for any other reason.

The article then diverges to consider the glances of the animal, the child, the lover and others in various phases of human life but finishes with the statement that the eye and look of the mental case may be of great value in offering hope in the prognosis.

R. C. DAVENPORT.

(7) **Tennent, J. N. (Glasgow).—Case of unilateral mydriasis.** *Glasgow Med. Jl.*, November, 1926.

(7) Under the above title **Tennent** describes a case of siderosis bulbi with mydriasis in the affected eye. The mydriasis was so marked at the very beginning that it, and it alone, brought the patient to the hospital for advice. Apparently the symptoms of siderosis were not at this time fully developed, but later on they were characteristic and the visual acuity had gone down. There was no history of any blow, but the patient was a miner by occupation, and in this class blows are of daily occurrence one might say. A radiogram having shown the presence of a foreign body the magnet was applied and the foreign body, a piece of steel, extracted from behind the iris, an iridectomy being required. The case did well and it is of interest to remark that the author was able to

follow it up and to determine that the brown deposit on the lens capsule and the folds which had existed in Descemet's membrane disappeared. On reading this account of a case of siderosis the reviewer recollected that he had had a case of siderosis with dilatation of the pupils, and that on looking up the subject he was unable to find mention of mydriasis in several textbooks, but found some references in contemporary literature to mydriasis as an occasional symptom. Tennent discusses the question: Why was the pupil dilated? A chemical or toxic irritation might be expected to cause contraction. "The dilatation must have been due," he says, "either to a selective chemical action of the metal upon the endings of the cervical sympathetic nerve or the dilatator muscle fibres in the iris, or to a mechanical irritation caused by the foreign body on these structures. Probably the latter is the true explanation; the dilatator fibres are situated immediately anterior to the two pigmented layers, and it would appear as if the foreign body, as well as dislodging some pigment, would irritate these muscle fibres, and thus cause dilatation of the pupil." In the foregoing quotation the author seems to imply that he considers the spots on the lens capsule to be due to iris pigment.

ERNEST THOMSON.

(8) **Dunn, Percy (London).—The loss of orientation in insured workmen.** *Lancet*, July 10, 1926.

(8) **Dunn** discusses the fact that after removal of an eye there is another factor to be taken into consideration besides that of the loss of sight of the removed eye, namely, loss of orientation. This loss of orientation may well lead to complications if the man goes to work before re-education in orientation has been established. For instance, he may injure himself or a fellow workman. But occasionally loss of orientation becomes permanent. Dunn discusses the position of the insurance companies and relates a case in which a man, a plater's labourer, went to work after loss of an eye and with the first stroke of the hammer hit a man on the head rendering him unconscious. As the result of a county court decision the one-eyed man became a pensioner for life of the insurance company.

ERNEST THOMSON.

(9) **Fortin, E. P.—Simple apparatus for the entoptic examination of the retinal circulation and of the blood corpuscles. (Un petit appareil pour la vision entoptique de la circulation rétinienne et des globules du sang.)** *Ann. d'Ocul.*, Vol. CLXII, p. 816, 1925.

(9) By means of the apparatus described **Fortin** has been able to study the circulation of blood in the retinal capillaries and to

note the effect of drugs on the circulation. In the aged and in arterio-sclerotic persons, the connection between the pulse and the impulse of the capillaries is scarcely noticed, a phenomenon readily observed by the young adult. The apparatus consists in (1) an objective lens about 6 inches in diameter, and 13 inches focal length; (2) a conical box or container, coloured black, with (3) an eyepiece formed of a piece of blue ground glass.

The direct light of the sun is used as illuminant, and by this means the capillaries and corpuscles are readily seen.

HUMPHREY NEAME.

(10) **Hammerli.—Further experience with bone-free Röntgen photography of the anterior segment of the globe. (Weiterer Erfahrungen mit der skellettfrei Röntgenaufnahme des vorderen Bulbusabschnittes.)** *Klin. Monatsbl. f. Augenheilk.*, May, 1926.

(10) **Hammerli** reminds us that small fragments of metal and large pieces of glass and stone are not shown in an X-ray plate taken by the orthodox methods. Such foreign bodies having as a rule but little kinetic energy lodge frequently in the anterior segment of the globe where they are available for the bone-free method. It is not necessary to describe in detail the method employed by Vogt to whom Hammerli was assistant, as it has now become a routine procedure in many clinics in this and other countries, and has shown up and helped to localize foreign bodies completely invisible in an orthodox plate.

T. HARRISON BUTLER.

(11) **Irvine and Weymann (Los Angeles).—The effect on visual acuity of viewing motion pictures.** *Jl. of Amer. Med. Assoc.*, October 2, 1926.

(11) In order to arrive at some conclusion as to the amount of fatigue caused by viewing motion pictures **Irvine** and **Weymann** compared it with the amount of fatigue caused by reading current magazines. The standard used was one adopted by the United States Army Air Service to determine the effect of smoking on visual acuity, the Ives test. They found that more fatigue is evident after reading magazines for forty-five minutes, than after viewing either a black and white, or a coloured motion picture for ninety minutes, if the visual acuity is used as a criterion for fatigue. They believe that those who suffer from eyestrain when viewing motion pictures are those who are unable to accomplish other ocular work without fatigue. Los Angeles is to be congratulated on its patriotic ophthalmologists.

A. F. MACCALLAN.

(12) **Madan, K. E. (Bombay).—A case illustrating the effects of prolonged application of cold to the eye.** *Lancet*, January 1, 1927.

(12) **Madan** reports the case of a woman, aged 52 years, who, suffering from a traumatic subconjunctival ecchymosis of no special importance, was ordered by her doctor to keep an icebag constantly on the eye. This she did for a fortnight at the end of which time she was seen by Madan and found to be suffering from acute glaucoma and ptosis. After less drastic treatment had been tried without reduction of the tension trephining was done and was followed by immediate relief of the pain and improvement of vision. The ptosis persisted for a week after recovery. An important point in the case is that acute congestive glaucoma appears to have been caused by the continuous application of cold in spite of the fact that the eye was myopic to the extent of 8 dioptres.

ERNEST THOMSON.

(13) **Meyer, Hermann (Zürich).—On the frequency of the senile non-myopic crescent conus in connection with juxta-papillary choroidal atrophy. (Ueber die Häufigkeit des senilen nichtmyopischen Bügels Konus bzw. juxtapapilläre Aderhautatrophie.)** *Arch. f. Ophthal.*, Vol. CXVI, 1926.

(13) **Meyer** examined the eyes of 152 myopic persons varying in age from 50 to 102, and in 35 of these found a posterior staphyloma present. In a control series of 100 non-myopic persons between 15 and 25 years of age it was uniformly absent.

An analysis of these positive cases goes to show that the development of this condition is dependent on the age of the person, and that it occurs more frequently with increasing years.

The term "Bügel" is used for two different conditions: (*a*) the conus, or scleral crescent, due to the oblique entry of the optic nerve through the sclerotic; and (*b*) the circum- and juxta-papillary atrophy of the choroid. The former commonly seen in axial myopia, remains stationary after the growth of the eyeball has ceased, *i.e.*, after the age of twenty, while the latter, which the author has in mind here, is a progressive condition which belongs to the group of senile and presenile degenerative changes that occur earlier and more markedly in myopic than in non-myopic eyes.

In this series of cases it was impossible to observe any relation between the vision or refraction and the position and extent of the staphyloma, or between the corneal refraction and the staphyloma, while the nature of the person's vocation demanding close work had no bearing on the incidence of the juxta-papillary atrophy.

In axial myopia this atrophy often reaches a higher degree than in non-myopes, but it may be entirely absent throughout life, and hence its development is to be attributed in the first instance, not

to stretching of the coats of the eye, but to increasing age and the changes attending it.

THOS. SNOWBALL.

(14) **Meyer, Weiner (St. Louis).—Mucous membrane from middle turbinate in plastic surgery of eye.** *Jl. of Amer. Med. Assoc.*, December 18, 1926.

(14) **Meyer** having been assured that the removal of the middle turbinate bone does no harm to a patient, has performed turbinectomy in order to get a supply of mucous membrane for use in plastic operations, such as for contracted socket. When separated and spread out the mucous membrane available is about an inch and a quarter in diameter. There has been no discomfort or any seeming disadvantage to any of these patients resulting from the removal of the middle turbinate bone. The graft has taken in all. The cosmetic results are far superior, and there is much less discharge than when skin grafts are used.

A. F. MACCALLAN.

## BOOK NOTICES

**Recent Advances in Ophthalmology.** By W. STEWART DUKE-ELDER. Pp. 329. London: J. & A. Churchill. 1927. Price 12s. 6d.

In the preface of this book the author states that "its main function is to serve as a connecting link between the standard text-book and a bulky and cumbersome periodic literature, to point out the trend of modern thought, to give some indication of what should be accepted as reliable and what should be regarded with reserve." The task of writing such a book is not a light one, and to have accomplished it within the compass of 329 pages makes the achievement still greater.

Since in the absence of light we should not see, the author begins with a brief outline of modern views on the nature of light, including in his description the quantum and undulatory theories and the theory of Einstein. He then passes on to the effects of light on the eye. Subsequent chapters deal with physiological optics, embryology, methods of diagnosis, general physiology, circulatory disturbances, glaucoma, cataract, sympathetic ophthalmitis, phototherapy, and regional anaesthesia. In all of them one is struck by the judicious power of selection exercised by the author in gleaning material from the wealth of literature which has recently accumulated round these subjects. His account of the slit-lamp, for example, is short but refers to most of the really important observations which have been made with this instru-

ment, and he reminds us that it is an adjunct to the older methods of examination, but does not displace them. An account is also given of biomicroscopy with ultra-violet light, based largely on the author's own observations, and mention is also made of polarized light, which renders visible the membranes of Descemet and Bowman.

One is apt to consider that ophthalmoscopy with red-free light, is a comparatively modern method of examination, but the author reminds us that more than twenty years ago Mayou called attention to the striking changes seen in the fundus when examined by the mercury vapour lamp. His article appeared in the Transactions of the Ophthalmological Society for 1903 and the lamp was in use at the Central London Ophthalmic Hospital for a period of a year. In spite of the extensive use of arc lamps and colour filters, on the Continent, the mercury vapour lamp is still found to yield the most satisfactory results.

The author's views on the physical chemistry of the aqueous and vitreous are well known to readers of this journal, also his researches on the intra-ocular blood pressure. These subjects receive adequate notice in the volume under review, the account given, forming a useful abstract of his published papers. The concluding section of the book on the neuro-psychological foundations of vision is particularly interesting and has been abstracted from Sir John Parsons' "An Introduction to the Theory of Perception."

The proof reading must have been very carefully done as there are only a few mistakes. On page 268, however, in the account of regional anaesthesia, there is an ambiguous statement as to the strength of adrenaline used with novocaine from which it would appear that the strength was 1 in 1,000 instead of the usual 1 in 10,000 and on page 224, reference is made to myotonia atrophica a disease which is usually described now as dystrophia myotonica.

In conclusion one may say that this is a book which will be read with profit by any ophthalmic surgeon, since however wide his reading may have been it is doubtful if it will have explored all the ground scheduled by the volume; moreover, superfluous matter is eliminated, adequate criticism is supplied and useful references are given.

**The Ophthalmic Year Book.** Vol. XXIII. Containing Bibliographies, Digests and Indexes of the Literature of Ophthalmology for the year 1926. Edited by WILLIAM CRISP, with the assistance of several collaborators. Pp. 338. Chicago: The Ophthalmic Publishing Co. 1926.

The present volume does not differ in arrangement from its immediate predecessor (noticed in this journal, Vol. X, p. 670, 1926) and is, as was that volume, compiled from the references

in "current literature" lists of the *American Journal of Ophthalmology*.

We regret to find that the editor anticipates that no further volumes will be issued on account of the inadequate support that the work has received. A joint committee of American Ophthalmological Societies issued a circular letter to some 2,000 ophthalmic surgeons asking for information as to the extent to which they had found the volume of use and the support they would be willing to provide. Only ten per cent. replied, so that, in spite of the generous support of an enthusiastic view, it seems unlikely that it will be found possible to continue the publication of the work. We understand, however, that the bulk of the information contained in the Year Book will continue to appear in the journal, though not arranged in the same accessible manner as is possible in a yearly volume.

## OBITUARY

### GEORGE COWELL

THE death of Mr. Cowell in his 92nd year on November 17, 1927, is truly the break of a link in the history of ophthalmology, for he was the last, in London at any rate, of the band of those who, like Hutchinson and the elder Critchett, were general surgeons in the first place and ophthalmologists in the second.

He was born in 1836, the son of George Kersey Cowell, Surgeon, of Ipswich and was apprenticed according to the usual rules of medical education prevalent at the time to a surgeon in Birmingham; on account of this he entered St. George's Hospital, London, at a later age than most of his fellow students. His name occurs on the pupils' register of St. George's in 1861; the last entry of that year. He was, as a matter of fact a post-graduate student, for he had taken the ordinary double qualification of the day in 1858. He was house surgeon to the West London Hospital, and proceeded to the F.R.C.S. in 1867. At the time of his death he was the second senior of the Fellows taken in chronological order.

Almost at once he was elected assistant surgeon to the Westminster Hospital and surgeon to the Royal Westminster Ophthalmic Hospital. He served each institution for twenty-five years, before retiring in 1896. He was also surgeon to the Victoria Hospital for Children for nearly twenty years and ophthalmic surgeon to the East London Hospital for Children, Shadwell.

But it is chiefly by his work with Dr. Barnardo on behalf of

poor children that he will be remembered; he was also a very active member of the Guild of St. Luke.

His chief contribution to literature was his "Life and Letters of Professor E. B. Cowell," the famous Sanskrit scholar and professor at Cambridge. His contributions to ophthalmic literature were not numerous, but he published his "Lectures on Cataract," and was the author of a set of test types for determining the acuteness of vision.

A prominent English Freemason, he was for a time Chairman of the Medical Committee of the Freemasons' War Hospital.

## NOTES

**Appointment**

Dr. R. G. ABERCROMBIE has been appointed Honorary Assistant Ophthalmic Surgeon to the Sheffield Royal Hospital.

* * * *

**Honour**

Mr. GEORGE EDWARD WHERRY, Consulting Surgeon to Addenbrooke's Hospital, has been elected an Honorary Fellow of Downing College, Cambridge.

* * * *

**Opticians Bill**

THE *British Medical Journal* publishes in its supplement for November 5, 1927, a report of the oral evidence given before the Departmental Committee on the Optical Practitioners (Registration) Bill by Dr. R. Wallace Henry and Mr. N. Bishop Harman. Those of our readers who are interested in the matter would do well to read this very clear account of the case against the Bill. In the course of their evidence they submitted an analysis of the names appearing upon the Association's list of registered medical practitioners who have intimated their willingness to advise on ophthalmic cases and prescribe spectacles when necessary (at a fee of one guinea) for insured members of approved societies:

| | England. | Scotland. | Wales. | Total. |
|---|---|---|---|---|
| No. of medical practitioners on B.M.A. Ophthalmic List (of whom 615 are members of B.M.A.) ... ... ... | — | — | — | 797 |
| No. of names and/or addresses on Ophthalmic List ... ... ... ... | 877 | 98 | 26 | 1,001 |

| | Consultants (believed to be practising solely as such) placed on List under (*a*) of Criteria. | Practitioners also engaged in General Practice, placed on List under following Section of Criteria | | | | Total G.Ps. |
|---|---|---|---|---|---|---|
| | | (*a*) | (*b*) | (*c*) | (*b*) and/or (*c*) | |
| England ... | 351 | 410 | 54 | 55 | 7 | 526 |
| Scotland ... | 43 | 44 | 7 | 4 | — | 55 |
| Wales ... | 15 | 8 | 2 | 1 | — | 11 |
| Total ... | 409 | 462 | 63 | 60 | 7 | 592 |

The criteria (*a*), (*b*), and (*c*) referred to are:

*(a)* That he has held hospital or other appointments affording special opportunities for acquiring special skill and experience of the kind required for the performance of the service rendered, and has had actual recent practice in performing the service rendered or services of a similar character; *or*

*(b)* That he has had special academic or post-graduate study of a subject which comprises the services rendered, and has had actual recent practice as aforesaid; *or*

*(c)* That he is generally recognized by other practitioners in the area as having special proficiency and experience in a subject which comprises the service rendered.

## FUTURE ARRANGEMENTS

### 1928

*January* 13.—Royal Society of Medicine, Section of Ophthalmology.

*February* 3.—North of England Ophthalmological Society at Newcastle-on-Tyne.

*February* 8.—Annual Dinner of the Royal London Ophthalmic Hospital at the Langham Hotel.

*February* 9.—Royal Society of Medicine, Joint Meeting of Sections of Ophthalmology and Neurology.

*March* 2.—North of England Ophthalmological Society (jointly with the Midland Ophthalmological Society) at Sheffield.

*March* 9.—Royal Society of Medicine, Section of Ophthalmology (Clinical Meeting).

*March* 30.—North of England Ophthalmological Society at Liverpool.

*April* 19-21.—Annual Congress, Ophthalmological Society of the United Kingdom at the Royal Society of Medicine.

*May* 11.—Royal Society of Medicine, Section of Ophthalmology.

*June* 8.—Royal Society of Medicine, Section of Ophthalmology (Annual).

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